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SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

PHYLLIS SMALL and DENISE FUBINI, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

LORILLARD TOBACCO COMPANY, INC., LORILLARD, INC., LOEWS CORPORATION, COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110949/96

(Caption continues...)

CONFIDENTIAL

Video Deposition of

TIMOTHY G. MARTIN

(Taken by Plaintiffs)

Winston-Salem, North Carolina

Thursday, February 19, 1998

9:30 a.m.

51770 5239

Reported in Stenotype by
Linda N. Russell, CSR, RPR
Produced by computer-aided transcription

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

MARY ANN HOSKINS, Executrix of the Estate of Edwin Paul Hoskins, WALTINA BROWN and DANTE AUBAIN, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

R.J. REYNOLDS TOBACCO COMPANY, RJR NABISCO, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110951/96

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

SHARLENE HOBERMAN and AUDREY HULSE, as Executrix, on behalf of the Estate of Lewis Hulse, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

BROWN & WILLIAMSON TOBACCO CORPORATION, B.A.T. INDUSTRIES P.L.C., BATUS, INC., BATUS HOLDINGS, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.

Defendants.

Index No. 110953/96

51770 5240

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

ROSE FROSINA, ELIZABETH COLAVITO and ANILDA ROSS, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

PHILIP MORRIS, INC., PHILIP MORRIS COMPANIES, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee) AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110950/96

SUPREME COURT OF THE ESTATE OF NEW YORK
COUNTY OF NEW YORK

CATHERINE ZITO, PETER HOBERMAN, and GEORGE ELISSEOU, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

THE AMERICAN TOBACCO COMPANY, INC., AMERICAN BRANDS, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110952/96

51770 5241

IN THE UNITED STATES DISTRICT COURT

FOR THE EASTERN DISTRICT OF PENNSYLVANIA
Civil Action No. 96CV-5903

STEVEN R. ARCH, WILLIAM BARNES, CIARAN McNALLY, CATHERINE POTTS, NORMA RODWELLER, BARBARA SALZMAN, EDWARD J. SLIVAK and JOHN TEAGLE, Plaintiffs, vs. THE AMERICAN TOBACCO COMPANY, INC., et al., Defendants.	Deposition of: Timothy Martin

TRANSCRIPT of testimony as taken by and before LINDA RUSSELL, a Certified Shorthand Reporter and Notary Public of the State of North Carolina, at the offices of Womble Carlyle Sandridge & Rice, 200 West Second Street, Winston-Salem, North Carolina, on Thursday, February 19, 1998, commencing at 9:30 in the forenoon.

51770 5242

A P P E A R A N C E S:

CLIMACO, CLIMACO, LEFKOWITZ & GAROFOLI CO., L.P.A.
Ninth Floor, The Halle Building
Cleveland, Ohio 44115
BY: JACK D. MAISTROS, ESQ.
For the Plaintiffs
(216) 621-8484

JONES, DAY, REAVIS & POGUE
Metropolitan Square
1450 G Street N.W.
Washington, D. C. 20005-2088
BY: TIMOTHY M. OPSITNICK, ESQ.
For the Defendant, R.J. Reynolds Tobacco Corporation
(202) 879-3939

ALSO PRESENT:

GUS BORSCHKE, Senior Counsel
R.J. Reynolds Tobacco Company

51770 5243

I N D E X

E X H I B I T S

VIDEOGRAPHER: We're going on the record. The time is 9:30 a.m. This is the videotape deposition of Tim Martin, taken by the plaintiff in the matters of Catherine Zito, et al., Plaintiffs, against the American Tobacco Company, Incorporated, et al., Defendants, Index Number 110952/96. And the matter of Sharlene Hoberman, et al., Plaintiffs, against Brown & Williamson Tobacco Company, et al., Defendants, Index Number 110953/96. And the matter of Rose Frosina, Plaintiff, against Philip Morris, et al., defendants, Index Number 110950/96. And the matter of Phyllis Small, et al., Plaintiffs, against Lorillard Tobacco Company, Incorporated, et al., Defendants, Index Number 110949/96. And the matter of Maryann Hoskins, et al., Plaintiffs, against R.J. Reynolds Tobacco Company, et al., Defendants, Index Number 110951/96.

These depositions are under the jurisdiction of the Supreme Court of the State of New York, County of New York. These depositions are being held at the offices of Womble Carlyle Sandridge & Rice, 200 West Second Street, Winston-Salem, North Carolina, on

Thursday February 19th, 1998.

My name is John Girdler. I'm the video specialist. The court reporter is Linda Russell. We're here in association with Waga and Spinelli, with offices located at Four Becker Farm Road, Roseland, New Jersey.

Counsel will now state their appearances for the record and the court reporter will swear in the witness.

MR. MAISTROS: Jack Maistros for the plaintiffs.

MR. OPSITNICK: Tim Opsitnick for R.J. Reynolds Tobacco Company.

MR. BORSCHKE: Gus Borschke for R.J. Reynolds Tobacco Company.

TIMOTHY G. MARTIN,

having been first duly sworn, was examined and did testify as follows:

EXAMINATION

BY MR. MAISTROS:

Q. Good morning, Mr. Martin, how are you?

A. Fine, sir. Thank you.

Q. My name is Jack Maistros. I'm going to be asking you a series of questions today.

If you don't understand my question, tell me. If you want to confer with your counsel, tell me. If you want to take a break, tell me. Okay?

Could you please state and spell your full name.

A. I'm Timothy Guy Martin, T-I-M-O-T-H-Y; middle name, G-U-Y; last name Martin, M-A-R-T-I-N.

Q. And your date of birth?

A. January 24th, 1958.

Q. And your current address?

A. [DELETED]

Q. Any plans to move in the near future?

A. No.

Q. How long have you resided at that address?

A. Approximately ten years.

Q. Are you married?

A. Yes.

Q. And how long have you been married?

A. Seventeen years.

Q. Any children?
A. Yes.
Q. What ages?
A. I have two sons, ages 12 and 9.
Q. Does your wife work for Reynolds?
A. No. My wife's a homemaker.
Q. So is mine.
Have you been in the military?
A. No, sir.
Q. Where did you go to high school?
A. I attended high school in Anson County, North Carolina. Anson Junior High School and Bowman Senior High School. Graduated in 1976.
Q. And where did you attend college?
A. I attended North Carolina State University school of engineering. I earned a bachelor of science degree in electrical engineering in May of 1980. I continued my graduate studies at North Carolina State University. I earned a master of science degree in electrical engineering in May of 1982.
Q. Any other formal education?
A. No.
Q. Take any chemistry courses?
A. Two.

Q. Which ones?
A. Basic Chemistry 101, first semester, freshman year. Chemistry continued second semester, freshman year, North Carolina State University.
Q. Did you take biology?
A. No.
Q. Have you taught any classes?
A. I taught as a teaching assistant while I was in graduate school at North Carolina State University. I taught a sophomore electrical engineering lab.
Q. Is -- are you licensed by the State of North Carolina?
A. Yes. I'm a registered professional engineer with the Board of Registration of Professional Engineers and Land Surveyors in North Carolina.
Q. What was your first tobacco-related employment?
A. My first tobacco employment was with R.J. Reynolds Tobacco Company in March -- beginning in March 1986. Here in Winston-Salem.
Q. What did you do between '82 and '86?
A. When I graduated from North Carolina State

University, I was employed by Carolina Power and Light Company in several assignments in the eastern part of North Carolina from September 1981 through February 1986.

Q. And you've been at Reynolds continuously since '86?

A. Yes, sir.

Q. Where?

A. I started March 10th, 1986, at the Whitaker Park manufacturing facility.

Q. I'm sorry, what was the name of it?

A. Whitaker Park facility in plant production engineering, specifically as a process control engineer.

Q. And how long did you hold that position?

A. I held that position until October of 1988.

Q. And then what happened?

A. I moved to the third shift at the Whitaker Park facility as shift maintenance manager.

Q. How long?

A. Until March of 1989.

Q. And then where?

A. From March of 1989 until approximately August of 1989 I served as a making and packing

process control engineer at the Whitaker Park facility in the process control engineering department.

Q. And what did you do in August?

A. I was moved to the Shorefair facility where we were installing, making, and packing complexes at that time. And I was designated the making maintenance manager.

Q. Till when?

A. Making maintenance manager.

Q. I'm sorry, until when?

A. Until when? Until approximately August of 1990.

Q. Then where did you go?

A. I was promoted as manager of process control engineering department for the Whitaker Park manufacturing facility.

Q. For how long?

A. I served in that role until January of 1994. Beginning in January, we consolidated the process control engineering departments between the Tobaccoville facility and the Whitaker Park facility. I became the manager of the combined process control engineering department.

Q. And do you hold that position today?

A. Yes. I was promoted to director of process control engineering in February of 1996. My scope of accountability was enlarged beginning in 1996 to include both Tobaccoville, Whitaker Park facilities, and also the tobacco processing facilities.

Q. Okay. Have you been deposed before?

A. Once.

Q. What kind of case?

A. The State of Arizona.

Q. Who deposed you? Do you remember?

A. Mr. Chris Jarvis.

Q. When was that?

A. September 1997.

Q. How long did that last?

A. In terms of the actual time of the deposition? Approximately two to three hours.

Q. Have you read that deposition?

A. Yes.

Q. Have you testified in a lawsuit before?

A. No, sir.

Q. Have you been a plaintiff or a defendant in a lawsuit?

A. No.

Q. Do you know what an affidavit is?
A. No.
Q. Have you ever signed a statement where you were required to have a notary swear to the truth of what you were signing, verify your signature?
A. Yes.
Q. What occasion?
A. When I purchased a vehicle.
Q. Ever provided any testimony to any governmental agencies?
A. No.
Q. Never called to appear before Congress, FDA, FTC?
A. No. None of the above.
Q. Ever been interviewed by the Justice Department?
A. No, sir.
Q. The FBI?
A. No, sir.
Q. Any state agencies?
A. No, sir.
Q. Have you known anyone at Reynolds that has been interviewed by the FBI or the Justice Department?

A. No, sir.

Q. Have you provided any statements, whether they were sworn or not, that you know that were subsequently submitted to a governmental agency in the course of your employment at Reynolds?

A. I'm not aware of any.

Q. What did you do to prepare for your deposition today?

A. Consulted with my attorney, Mr. Opsitnick, and Mr. Borschke.

Q. And for how long?

A. Mr. Opsitnick and I met approximately three times, two to three hours each session. Mr. Borschke joined us for one session.

Q. Did you review any documents?

A. No, sir. Only the summons to appear here today.

Q. Okay. And did you review any other depositions other than your own?

A. No, sir.

Q. Did you review your own deposition prior to this deposition today?

A. No, sir.

Q. Did you review any documents on your

own, either at Reynolds or at home, in preparation for your deposition?

A. Only scattered notes that I make in the normal course of doing my business as director of process control engineering to clarify and make current my knowledge of -- of our business at Reynolds Tobacco Company.

Q. Okay. And did you review any prior depositions of anyone else?

A. No, sir.

Q. Have you discussed with anyone that's employed or was employed at Reynolds, have you discussed any of those individuals' depositions that you know about?

A. No, sir.

Q. Do you know anyone who's been deposed other than you?

A. Yes.

Q. Who?

A. Mr. Ron Willard, Vice President of PT&D.

Q. Did he tell you that was exciting?

A. Mr. Willard and I discussed the fact he was deposed. He told me you were a congenial gentleman.

Q. I'll fix that.

A. That was about the substance of what we discussed.

MR. OPSITNICK: I think Mr. Willard was apologizing for giving him up.

BY MR. MAISTROS:

Q. You understand you're here because of Mr. Willard?

A. That did come up in our conversation.

Q. Okay. Now, have you ever been demoted at Reynolds?

A. No, sir.

Q. Would you consider your -- your different positions you've outlined previously as all promotions?

A. In every case, yes.

Q. Ever been disciplined in any fashion?

A. No, sir.

Q. Who actually hired you, the individual -- interviewed you?

A. Mr. Bob Farmer who was at the time manager of Whitaker Park plant production engineering.

Q. And what is Whitaker Park?

A. Whitaker Park is a manufacturing facility where we condition, blend, and prepare tobacco

to make into finished cigarettes in the making and packing area of the facility.

Q. Okay. Is that -- since you've been at Reynolds you've had some contact with Whitaker Park pretty much on and off since you've been at Reynolds?

A. Yes.

Q. Is that the only facility where that's done for Reynolds?

A. Excuse me. No. We basically have two facilities where we make finished product: The Whitaker Park facility and the Tobaccoville facility, which is located about 15 miles north of Whitaker Park, both in the Winston-Salem area.

Q. Is there anything that distinguishes those two facilities?

A. Yes. The Tobaccoville facility uses automatic guided vehicles in the making and packing area. The Whitaker Park operation does not. The Tobaccoville facility is larger. It has 72 making and packing complexes.

Q. When you say "packing," are you talking about finished cigarette products?

A. Yes. Could I briefly describe what I mean

by a complex, making and packing complex?

Q. Sure.

A. Basically, the cigarette rods are formed on a cigarette maker. That's where the tobacco and the paper join and become a cigarette rod. The filters are attached. And those finished cigarettes go over to a cigarette packing machine, or packer, as we term it.

In the cigarette packer the wrapping materials are wrapped around the bundle of 20 cigarettes. The packed cigarettes then move to the pack/over-wrap machine which applies the polypropylene film around the pack, and the tear tape, small tear tape on top of the pack that's used to open it.

From the pack/over-wrap machine, the packs are cartoned ten packs to a carton in a cartoning machine. From the cartoning machine we move to the case packer where, depending on the case size, a number of cartons are plunged in to fill the case.

From the case packer we move to the palletizer. It's a robotic device which stacks in a predesigned stacking pattern those cases onto a pallet. The pallet is then taken to

finished goods shipping area for shipment to our central distribution center.

Now when I say a complex, I'm talking about a complement of machinery, cigarette rod maker, packer, pack/over-wrap, cartoner, case packer, palletizer.

Q. Okay. Now, what is automated at Tobaccoville that's not automated at Whitaker Park? The whole process?

A. No. Both processes, both facilities are highly automated. The Tobaccoville facility differs, to go back to an earlier question, with the automatic guided vehicles. And Tobaccoville has a full complement of primary processing equipment. Primary processing equipment is that equipment where we blend, condition, and prepare the tobacco as a blend to be used in the making and packing process.

Q. Okay. Let's back up, then.

The -- the Whitaker Park and Tobaccoville both produce finished cigarettes at the end?

A. That's correct.

Q. Tobaccoville's a little more advanced in some of the automation. When you

say "automatic guided vehicles,"..what are those?
A. Those are, basically, robots that take away waste, rejects, and finished product from each complex.

Q. All right. Does -- do both plants make a variety of cigarettes?
A. Yes.

Q. Is there one plant that makes only one kind and one plant that makes another kind? Does it matter?
A. In certain cases there are. A making and packing complex as, I've defined earlier, is dedicated by configuration. Configuration means length of cigarette, circumference of cigarette, whether it's filter tipped or non-filter tipped, et cetera.

So those physical design parameters determine the configuration. There are some configuration complexes at Whitaker Park that are not at Tobaccoville and vice versa.

Q. Well, you mentioned the Shorefair.
A. Yes, sir. I did.

Q. What is that? How is that different than Whitaker Park?
A. Okay. My assignment at the Shorefair

facility was during a time when we were closing down our downtown manufacturing facilities. Those facilities had been in operation many, many years.

We were installing a number of making and packing complexes and primary cut filler feeders in the Shorefair facility in order to move those complexes out of the downtown facilities.

Q. Okay. Where is Shorefair located?

A. Shorefair is located near the Whitaker Park compound.

Q. Is it no longer in operation?

A. It is in operation today.

Q. And what do they do there?

A. Our Eclipse products are made at the Shorefair facility.

Q. Is that the only thing that's made there?

A. Yes.

Q. Is there a reason that Eclipse has to be made at a different facility, or is that just by chance?

A. I don't know of any particular reason other than it has equipment that is not the same as

equipment that's used in other configurations. Just like a 100-millimeter cigarette requires different equipment than does an 85-millimeter cigarette.

Q. At which facilities is reconstituted tobacco processed?

A. Could you clarify the question?

Q. Okay. Let -- let's start over. At Whitaker Park do you get -- describe the -- describe for me -- educate me, if you will, the beginning process of tobacco when it comes in off the market. Where is it stored? Then, where does it go? Is that the function of Whitaker Park, or is that another facility?

A. Okay. Let -- let's start at the beginning and stop me anywhere you'd like for -- for questions.

Basically, tobacco is purchased from dealers coming from the farmer's field. Once the tobacco is purchased, it's stemmed in a stemmery process. We have one stemmery process.

Q. Where is that?

A. It's called the Brook Cove facility. It's located in the community of Brook Cove in Stokes County about 25 miles from here.

Q. Tell me what "stemmed" is. I have no knowledge -- assume I have no knowledge of tobacco.

A. Okay. Tobacco leaf has a large mid-rib stem, as it's termed, and various vein stems that emanate out from the mid-rib stem. The stemming operation is a threshing process whereby the lamina, as we term it, the leaf, is removed, or torn away, from the stems.

Q. Even those little veins, or just the big one?

A. The big one and as many of the veins as can be economically removed.

Q. Okay.

A. After the stemming operation, the product is termed redried leaf. And within redried leaf that consists of flue-cured tobacco and burley tobacco. It's packed in approximately 900-pound containers called tersa bales. That's named after the man who invented the container type.

Q. Mr. Tersa Bale?

A. Mr. Tersa. Now, that's flue-cured and burley.

Q. Okay.

A. Maryland tobacco we also purchase, and it's

treated the same as burley tobacco. Oriental tobacco --

Q. I'm sorry, the Brooke Stone (sic) -- Brooke --

A. Cove, C-O-V-E.

Q. Brook Cove facility; where is that located?

A. In Stokes County, adjacent to Forsyth County where we are here.

Q. There's one place where that's done for Reynolds?

A. That's the only stemmery that we operate.

Q. Now when you say stems, I understand the veins and the main stem going down the leaf. Does it also include what connects it to the stalk? Is that a stem?

A. The mid-rib stem includes the stub that connects the leaf to the stalk.

Q. Okay. Is the stalk used at all by Reynolds?

A. Not to my knowledge.

Q. So stems is the -- what I think of a stem of a leaf plus the veins going through it. You refer to that as stems? That whole part?

A. Yes.

Q. Okay. Then what's done with the stems?
A. The stems are separated at the stemmery into stalk position and length, flue-cured and burley.
Q. What do you mean by stalk position?
A. The physical position on the stalk in the field that the stems came from.
Q. You mean lower on the plant versus higher on the plant?
A. Yes.
Q. How do you know that when it's been picked, or is it picked by that -- before it gets to this plant?
A. The United States Department of Agriculture grades tobacco according to stalk position at the warehouse before the tobacco is purchased by tobacco companies.
Q. So when it comes to the Brook Cove facility, it's already been picked off what I'll call the -- what's the big stem called of the tobacco plant?
A. It's mid-rib stem.
Q. Mid-rib stem. It's picked off of that, but you know because how it's shipped what

grade it is? Does it come in bags? Boxes?
A. The tobacco comes into the stemmery in a burlap sheet.
Q. And it's graded?
A. Yes.
Q. What are the various grades?
A. There are many, Mr. Maistros. I -- I can't quote them from memory.
Q. Do they have names or letters or numbers?
A. Yes.
Q. One of those?
A. Both.
Q. And do you know what criteria they use to select the grade?
A. I do not know the criteria the United States Department of Agriculture uses in grading tobacco.
Q. Does the nicotine content vary depending upon the grade?
A. Yes.
Q. Is there some chart I can look to, to figure out if I know the grade what the nicotine content is?
A. I'm not aware of one.

Q. Is there a difference in the nicotine content between flue-cured and burley tobacco?
A. Yes.
Q. Are the -- are there different grades that are used for burley versus flue-cured, or is it the same system?
A. Same system is used to stem and grade tobacco for flue-cured versus burley.
Q. Okay. And what is oriental tobacco?
A. Oriental tobacco is a sun-cured leaf which comes from typical countries such as Turkey or Greece. It's often referred to as Turkish tobacco. It's a smaller leaf, about the size of your hand or smaller.
Q. Is the nicotine content of oriental tobacco different than flue-cured and burley?
A. Yes.
Q. Do you understand the concept of nicotine transfer efficiency?
A. No, sir. I'm a manufacturing engineer.
Q. Okay. Does the nitrogen content of these tobaccos differ?
A. I don't know.
Q. Where is the tobacco stored before

it ends up or goes to the stemmery?
A. Before it goes to the stemmery? It would be stored at the warehouse where the leaf was purchased by the tobacco companies.
Q. Reynolds doesn't have, like, a holding area?
A. Not prior to purchase.
Q. Okay. After purchase, where is it stored?
A. After purchase it goes to the stemmery or to a dealer stemmery. Understand, we don't stem all of our own tobacco through our Brook Cove plant. Some of it we purchase stemmed from dealers.
Q. And do you just purchase, then, the leaf, not the stems?
A. We purchase both.
Q. Do you know what percentage Reynolds stems versus have somebody else stem?
A. I -- I don't understand the question.
Q. Reynolds has some dealers stem these leaves?
A. Some of our leaf, yes.
Q. Do you know what percentage of that versus Reynolds doing it on their own?

A. I don't know that right off the top of my head. I can tell you that beginning this year that we'll be -- all of our leaf will be stemmed by a dealer. The Brook Cove facility will cease operation this year.

Q. Do you know if at the Brook Cove facility if the tobacco is treated in any fashion?

A. Yes. The tobacco is conditioned. When I say "conditioned," it is exposed to a steam and water environment. And it's exposed to steps in the process to clean any sand, grit, or other material that might be present from the farmer's field.

Q. Is that what the steam and water does?

A. Yes. It -- it -- basically, it conditions the leaf. It makes it pliable. The moisture content of tobacco is very critical. If you tried to process dry tobacco, you basically grind it up to dust, or fines. If it's too wet, there are other problems.

Q. Is there a -- at the Brook Cove facility, is it proper to refer to that facility as the stemmery?

A. Yes.

Q. At the Brook Cove facility as part of the stemmery process, is there anything else done to the tobacco other than applying steam and water?

A. The tobacco is thrashed through thrashers, which remove the stems from the lamina, or leaf. The lamina is then sized using sizing screens, or SIVS.

Q. How big a piece is this -- is this lamina after the thrashing process?

A. It varies. That's the purpose of sizing, to separate the small material from the larger material. The larger pieces would be approximately two by three inches. The smaller pieces could be as small as a half or quarter-inch or less flake of tobacco.

Q. Is there a dust byproduct as a result of this thrashing process?

A. Yes.

Q. What's done to that?

A. It's discarded.

Q. From that facility or forever?

A. Forever, as far as I know.

Q. Has Reynolds ever employed any

processes to try to salvage and use that dust?
A. Specifically, the stemmery dust?
Q. Yes.
A. Not to my knowledge.
Q. Is there anything in the water and steam other than water and steam?
A. No, sir.
Q. Do you know what a humectant is?
A. Yes, sir.
Q. Is there any application of humectants at the stemmery?
A. No.
Q. Do you know what a top dressing is?
A. Yes.
Q. Is there any application of top dressings at the stemmery?
A. No.
Q. Do you know what ammonia is?
A. Yes.
Q. Is there any use of ammonia at the stemmery?
A. No.
Q. How about diammonium phosphate?
A. No.
Q. How about ammonia in any form?

A. Not to my knowledge.

Q. Are you familiar with the list of processing aids and additives that Reynolds and other tobacco companies submit to the government every year?

A. Some of them.

Q. Do you know if any of those processing aids and additives are employed at the stemmery?

A. As far as I know, none of those are employed at the stemmery.

Q. Okay. What happens to the lamina and the stems after it's treated with the water and steam at the stemmery?

A. As I said before, it's thrashed, it's sized into its size fractions, and it's packed out into tersa bales. Those tersa bales are termed redried leaf for flue-cured and burley tobacco.

I was specific in saying flue-cured and burley because the oriental does not go through the stemming process. The redried leaf then goes into a storage facility for a period of one to two years.

Q. Why is it called redried leaf? Because it's redried after the water and steam

is applied?
A. That's exactly right.
Q. One to two years it's stored?
A. Yes, sir.
Q. How about the stems? What happens to the stems?
A. The stems are packed out in boxes and are placed in storage for one to two years.
Q. And the stems are packed according to still stalk position?
A. Stalk position, length, flue-cured, burley.
Q. Are they treated in the same manner, that's the steam and water, and then just dried?
A. Yes.
Q. Are they dried at that facility?
A. Yes.
Q. Is there any heat applied to it, or is it just open-air dry?
A. It's, basically, a big oven that's used to dry the stems down to a moisture suitable for storage.
Q. The stems and the leafs that are treated with the water and steam, I assume there's some water and steam left in a vat around the floor after that process. What is

it? Is it -- when it's treated with the steam is it on a conveyor belt or something?

A. Well, basically --

MR. OPSITNICK: Objection. Compound.

BY MR. MAISTROS:

Q. I don't know. Just describe to me: As the water and steam's applied, what's left with the residue water and steam?

A. If there's any residue there, it is evaporated or taken out through air handling systems to the exhaust.

Basically, these tobacco components are tumbled in a horizontal cylinder called a conditioning drum. And we spray steam and water, one or other or both, to condition the tobacco in that manner. That's a common technology used in many areas of the process.

Q. Is there any -- are there any tests done to the stems or leaves at the stemmery to determine the nitrogen content or the nicotine content of the tobacco or the stems?

A. No, those tests are not done at the stemmery.

Q. Is there anything else that's done

at the stemmery you haven't described?
A. We have a quality control department at the stemmery that is very much concerned with particle size. It's a threshing operation, degrades tobacco. Can degrade tobacco if it's not operated in good control.

They're concerned about the level of stems that are left with the lamina because the objective of the stemming process is to remove those larger stem pieces.

There are various tests that the quality control laboratory runs to provide feedback information to the people who run the process to maintain good process and quality control.

Q. And where is it stored? Where is the tobacco stored after the stemmery?
A. We have a number of storage sheds around the Winston-Salem and at the site of our current stemmery at Brook Cove where the tobacco's stored.

Q. Then what happens to the stems and tobacco -- or stems and leaves -- stems and lamina, I'm sorry, after it's aged?
A. After it's aged for a period of one to two

years, then we will bring those tobaccos into primary processing at Tobaccoville to begin the manufacturing process.

Q. Or Whitaker Park?

A. No. Tobaccoville.

Q. Everything starts at Tobaccoville, is that correct, after aging?

A. Yes. Let me explain that, Mr. Maistros. Whitaker Park has a partial complement of a primary process. It does not have the strip processing equipment as Tobaccoville does.

Q. Okay. Then describe the Tobaccoville process, and stop and let me know when you get to the point where Whitaker Park has the same capability.

A. Primary processing begins with receipt of tobaccos: Flue-cured, burley, oriental, and reconstituted sheet. Those tobaccos are brought in, the wrapping materials are removed, they're placed in a rack storage system for further use. Our rack storage system can accommodate upwards of 1600-plus containers of tobacco.

Q. You did not mention expanded. Does that fit in there somewhere?

A. We'll -- we'll get to that, I -- I imagine,

in a few minutes.

Q. Okay.

A. Those tobaccos are selected to make a batch, as we term it, of 60,000 pounds of group blended strip tobaccos. The tobaccos are selected according to a recipe.

Q. What's the group blended strip?

A. A group blended strip consists of the individual grades of flue-cured or burley or oriental tobaccos.

Q. In certain amounts?

A. Yes.

Q. I assume there's different group blended strips?

A. Yes. The group blended strip types vary by stalk position and by whether it's flue-cured, burley, or oriental.

Q. What's the biggest difference in the quality of the tobacco based upon stalk position? I mean it --

A. What do you mean?

Q. Is it color? Is it taste? Is it feel? Is it chemical content?

A. Well, I'm not a leaf scientist. But my layman's understanding of what goes into the

quality of leaf is, basically, its maturity: Is it ripe or unripe or overripe? Is it a thin-bodied leaf or a thick-bodied leaf?

Q. These group blended strips, are there different group blended strips for every different brand of cigarette Reynolds makes?

A. No. The group blends are somewhat generic in that those group blends are designed by stalk position within a tobacco type.

Q. Well, let's assume, hypothetically, you had 33 percent flue-cured burley and oriental in a group blend. Is there another group blend that might have 20 percent of one, 20 percent of another, and 60 percent of a third?

A. Let me explain something that I -- I said earlier. The group blends are designed by stalk position, either flue-cured or burley or oriental. In other words, you will have a lower stalk flue-cured group blended strip. And you will have burley upper stalk group blended strip.

Q. I see. So the -- the group blend strip has more to do with the stalk position than the type of tobacco?

A. Yes.

Q. Then you put it in each of these different group blend strips or in 60,000-pound batches?

A. Yes.

Q. Is there, like, lower, upper, middle, or more variations than that?

A. It depends on the recipe.

Q. Where do you get the recipe?

A. Research and development.

Q. Have you seen the recipe?

A. I have seen recipes in the past.

Q. And what's on the recipe?

A. A group blended strip recipe will consist of a list of grades of flue-cured or burley or oriental.

Q. That's all, just the stalk --

A. Grades --

Q. Grades?

A. -- and the percentages of each of those grades to include in a batch run of production.

Q. At the point where these group blend strip batches are made, is it just the tobacco that came out of the aging facility?

A. That's it.

Q. Nothing added to it?
A. Steam and water. Let -- let me describe somewhat the process of group blending.
Q. Okay.
A. We've covered how the tobaccos come into the process. The containers, you can imagine, are tightly compressed because they've been in storage for one to two years.

The first operation is a slicer. It's a horizontal machine to separate the tersa bale into three or four slices. Those slices are then put through a steam probe. Basically, this is a device that has many probes that extend vertically. There are small holes in those probes through which we inject live steam as the probe comes down into the slice of tobacco.

The purpose of that device is to begin to open up, or a term we use a great deal is delaminate, the compressed strip. After the steam probe, the probe slices move into an air tower separator system. Excuse me. Let me back up one step.

After probing, those slices go into a conditioning cylinder. This is a large,

horizontal, rotating cylinder, or drum as we call it, that has the capability of injecting steam and water into the probed leaf. The purpose is to get the tobacco temperature up to accept water because it's been very dry in storage, and to assist in delaminating the tobacco.

Q. Okay.

A. After delaminating further in the conditioning drum, it's subjected to a air tower separator system. The purpose of this system is to remove any compacted pads or pieces of tobacco that have not been properly delaminated and to remove any foreign material that may have come from the farmer's field.

Q. Okay.

A. After air tower separation, there's a preblending step which is simply a mechanical device to ensure some initial mixing of the grades of tobacco. And the typical process from that point goes into what we term a bulker, or a silo.

A bulker is a large rectangular box that's fed from the top. The tobacco grades are laid down in a corn row fashion in the bulker.

The 60,000 pounds are placed in the bulker in that fashion.

After the bulker is filled, the bed, or bottom, of the bulker begins to inch forward as we discharge that tobacco from the bulker. There's a row of vertical doffers, or rakes as you might term them, at the front of the bulker which tend to doff off, or rake off, a vertical cross section of what you put into that bulker in a horizontal corn row fashion.

Q. These bulkers will each have one type of tobacco, burley, flue-cured, or oriental, but of varying grades?

A. They will have a group blended strip batch in them.

Q. Each one, though, will only have one type of tobacco in it?

A. That's correct.

Q. But varying grades?

A. Yes.

Q. And up to this point in time in the process, the only thing that's been applied to the tobacco is steam and water, still?

A. That's correct.

Q. Okay. What happens next?

A. Once we formed the group blended strips, the different types, then those are ratioed out according to a recipe to form a final blended strip made in 60,000-pound typical batches. We're still at Tobaccoville in this discussion so far.

Q. Okay. Are we in a different recipe now, though?

A. Yes.

Q. Where does that recipe come from?

A. Research and development.

Q. Are we to the point yet where the recipe is for a particular cigarette?

A. No.

Q. Just a blend?

A. (Witness nods head.) Now the final blend is more dedicated, at this point, to a cigarette brand than is the generic group blend. But we're not yet to a finished blend.

Q. Have we got any expanded tobacco in this process yet?

A. No.

Q. Do we have reconstituted tobacco in it yet?

A. Yes. This is the point at which

reconstituted tobacco is added to the final blend.

Q. Now when you say "final blend," it's still not a specific cigarette; but it might be a brand by this point?

A. We refer to final blend because that's the final step of strip blending. Strip means the tobacco is still in size -- pieces of roughly two by three inches. It's not yet cut into the fine filaments of a cigarette.

Q. Is that what's it's called when it's in those little pieces; it's actually in the cigarette filaments?

A. We term that cut filler tobacco, or cut tobacco.

Q. And we haven't gotten there yet?

A. No, sir.

Q. Okay. So at this point we have various 60-pound -- 60,000-pound pieces of different grades of tobacco now being mixed in different ratios, different types of tobacco?

A. That's correct.

Q. And with the different types, all are made up of various different grades within the type?

A. Yes.

Q. So the most you're going to have going into this recipe is three different mixes: Flue-cured, burley, oriental?

A. Yes. If you mean that plus reconstituted tobacco.

Q. Plus reconstituted.

So, all the recipes up to this point in time are all made up of four different products, if you will?

A. Yes.

Q. Is there a name for this recipe versus the first recipe you talked about?

A. Yes. It's called the final blended strip recipe.

Q. And they'll all have on the -- these recipes the same four things, those different four types of tobacco. There's no processing aids up to this point? There's no top dressings? There's no chemical additives?

A. At this point, the burley tobacco may receive flavoring.

Q. Now, is that -- that's obviously before it goes into this recipe, because you can't treat the burley without treating the

oriental. So you have to treat the burley before it goes into this final blend strip recipe?

A. That's not correct.

Q. Tell me how that happens, then.

A. The burley group blends, the group blended strip components, may receive at this point an additional flavoring as they're ratioed out of the storage bulker.

Q. And what type of flavorings?

A. Typical flavorings are cocoa, licorice, high fructose corn syrup, sucrose, and water.

Q. And the purpose of those flavorings?

A. To increase the sugar content of the burley tobacco. Again, I'm not a leaf scientist, but that's my understanding.

Q. And how are they applied?

A. The burley tobacco if it's to be flavored, or I may use the term cased or casing, goes through a horizontal cylinder. In that cylinder the tobacco is tumbled. There's a spray header located inside that drum through which the casing, or flavoring material, will be sprayed on the tobacco.

After the casing, if it receives it,

it will go through a drying step. Because the moisture at this point will be 30 to 35 percent. We go through a large convection dryer to dry that burley tobacco back down to a specified moisture.

Q. Are quality control tests run at this point on the burley tobacco to determine if these additives or flavorants remained after the drying process?

A. No.

Q. How about before? How do you know if you've got the right amount of flavoring?

A. We have a highly automated direct digital process control system combined with instrumentation, such as micro motion flow meters for the liquid components. We use fair scales for the solid components.

Those components are metered with the accuracy that an automated control system affords so that we make a consistent product relative to the inclusion of these components.

Q. Are there any other flavorants that are used, other than the ones you cited, at this stage?

A. There are some other burley tobacco flavors

that are used to a lesser extent.

Q. Do you know what they are?

A. I can recall, I think, fig, prune, plum flavor. And I believe a maple flavor. I'm not absolutely certain of those, because those are not used as frequency -- frequently as the typical flavors that I gave you.

Q. And is it your testimony that all these flavorants are used to increase the sugar level?

A. I'm not a leaf scientist. My layman's understanding as a manufacturing engineer is that burley tobacco is flavored to increase the sugar content.

Q. Do you have any understanding of what, if any, relationship there is between sugar content and nicotine yield or nicotine transfer efficiency?

A. No, sir.

Q. And is there any such -- these are called casings?

A. Yes.

Q. Are there any of these casings applied to the flue-cured tobacco up to this point in time?

A. No.

Q. Or the oriental?

A. No.

Q. Or the reconstituted?

A. No.

Q. Okay. What happens next?

A. The burley tobacco, depending on whether it's cased or not, will join the flue-cured and oriental to be placed into a bulker for blending of those components. That bulker is called a final blend strip bulker.

Q. Is this a third recipe?

A. No. We're still making a final blended strip.

Q. Okay. Anything applied to the tobacco at that point?

A. No.

Q. Then what happens?

A. The final blended strip is stored in the final blended strip bulker until it's required by the next downstream process, which is called casing and cutting.

Q. This is still at Tobaccoville?

A. Yes. Now at this point Whitaker Park has also a casing and cutting operation.

Q. Okay. So the tobacco that's treated at Tobaccoville, up to this point in time, could be shipped over to Whitaker Park and finished there?

A. It is. The final blended strip for Whitaker Park is sourced from Tobaccoville.

Q. Has Whitaker Park been doing anything in the tobacco manufacturing process up to this point in time?

A. No.

Q. So, the first role of Whitaker Park is to get this final blend strip bulk tobacco to begin the process?

A. That's right. The tobacco is shipped to Whitaker Park in pallets. The pallet contains from 2300 to 2500 pounds of tobacco.

Q. Okay. Describe the beginning of the -- and up to the beginning here, the casing and cutting process, we still haven't figured out the role of reconstituted tobacco, right? Or you haven't explained it. It's not part of the process yet?

A. The reconstituted tobacco, as I mentioned, is added as a component of the final blended strip.

Q. Okay. Where did that come from?
A. It came from our reconstituted sheet manufacturing facility, which is located adjacent to the Whitaker Park manufacturing center.
Q. Is that the only reconstituted facility?
A. That is the only facility that we have in operation. We have another facility in downtown Winston-Salem; it is not used.
Q. Where was KDN made?
A. KDN was made at a small plant in the Whitaker Park compound.
Q. When was it in operation?
A. From the time I came to Reynolds Tobacco working in the blending operation, which would have been 1986, at least. It may have been prior to that; I don't know. But from that point up until it was discontinued, approximately 1992.
Q. And did the KDN tobacco enter the Whitaker Park manufacturing process at some point in time up to where you've stopped describing it now?
A. Yes. Because prior to 1994, Whitaker Park

had a full primary process. Essentially the same as Tobaccoville.

Q. And did the KDN, when it was in existence, enter the Tobaccoville process prior to the point where you stopped describing it now?

A. Yes.

Q. At what point?

A. The KDN was considered a group blended strip. It came in, in tersa bales. It was sliced, probed as we've described, and placed in group blended strip bulkers.

Q. And was it treated -- or do you know how it was treated at -- at the facility adjacent to Whitaker?

A. Yes.

Q. Could you describe that process.

A. My knowledge of that process is that it used steam, ammonia, and water to treat the burley tobacco.

Q. Just the burley?

A. That's my understanding.

Q. And what form did the ammonia take?

A. I don't understand the question.

Q. Was it -- ammonia, was it gaseous

ammonia? Was it solid ammonia? Was it diammonium phosphate?

A. I'm not certain.

Q. Okay. The steam, ammonia, water in some form was applied to the burley tobacco for what purpose?

A. Steam, ammonia, and water was applied to the burley tobacco to reduce the nicotine content of the burley.

Q. And do you know how it was? Was it the steam, the water, or the ammonia that helped remove the nicotine?

A. I have no idea.

Q. You don't know the reaction of ammonia and nicotine?

A. No, sir.

Q. Okay. Well, how much of the nicotine was removed?

A. Approximately 60 to 65 percent.

Q. Were there different grades of KDN where more nicotine was removed and --

A. Not to my knowledge.

Q. There was one type of KDN?

A. Yes.

Q. So any KDN that came to Whitaker

Park or Tobaccoville had the same nicotine reduction amount to it? There weren't different grades depending on how much nicotine was removed?

A. There was only one KDN group blended strip item that I have experience with coming in to Whitaker Park which then was placed in a group blended strip bulker as I described.

Q. And what was the purpose of the KDN process?

A. Again, I'm not a product developer. My layman's understanding was that it was used to achieve product taste.

Q. That's all? Taste?

A. That's the extent of my knowledge.

Q. What was done with the byproduct from the KDN process?

A. As far as I know, it was discarded.

Q. Do you know how?

A. No.

Q. Did the facility have an incinerator?

A. I don't know.

Q. Was it always discarded?

A. As far as I know, it was always discarded.

Q. Do you know of any research that was done where the KDN byproduct was used?
A. I know of some experimental work that was considered at one point.
Q. What was that?
A. That experimental work dealt with adding potentially some of the KDN components back to a product.
Q. Which product?
A. It was an experimental product called Prisms II.
Q. Prisms Roman numeral two?
A. Far as I know.
Q. And was it test marketed?
A. Not to my knowledge. Again, I'm not in the marketing department. I'm not aware of those matters.
Q. Who had the most knowledge of the KDN process at Reynolds?
A. I'd have to reflect on that a minute.
(BRIEF PAUSE)
It's difficult to come up with a single name as to who might be able to more adequately describe the process.
Q. Was there a manager of that

facility?
A. Yes.
Q. Who was that?
A. The one manager that I was familiar with, his name was Ken Shepherd.
Q. Is he still at Reynolds?
A. I don't think so.
Q. Did he live in the [DELETED] area?
A. I think so. I'm not certain.
Q. Okay. Have you heard of Project REST, R-E-S-T?
A. I've heard of that term.
Q. Do you know what it is?
A. No.
Q. Or was?
A. No. I'm not involved in product development or experimental studies.
Q. Did you have inter -- any interaction with Wallace Hayes?
A. No. I've heard of Wally Hayes, but I did not have interaction with him.
Q. Did you have interaction with Anthony Colucci?
A. No.

Q. Mike Shannon?
A. No.
Q. Joseph Bumgardner?
A. No.
Q. Gary Huber?
A. No.
Q. Ever hear the names?
A. No. I've heard the name Mike Shannon but didn't know him.
Q. The -- why do you -- if you know, why was KDN stopped?
A. Well, the plant was outdated, in need of resources to be invested in it to bring it up to date. I had heard that testing had indicated that KDN was no longer needed in a product.
Q. No longer needed? Is that what you said?
A. That's what I said. And the KDN process was very hard on the tobacco leaf. It degraded it and generated tobacco fines to a great extent.
Q. Well, what -- was all different types of grades of burley sent to the KDN processing facility?
A. I don't know.

Q. Were stems treated in the KDN processing facility?
A. Not to my knowledge.
Q. Was there a different facility that did a similar process with respect to stems?
A. Yes.
Q. And what was that facility called?
A. We referred to it at the time as a prototype process, as one of our shed processes. Shed simply means the building that it was in. I believe it was Shed 113. I'm not certain of that. I believe that's correct. There, flue-cured stems were expanded with steam and water.
Q. For what purpose?
A. For including in tobacco blends.
Q. And was the nicotine content reduced?
A. I don't know.
Q. Was it done for taste?
A. Again, I'm not a product developer.
Q. And how long was that process in development or in actual work?
A. That process was called, again, cut/rolled expanded stems. And that process was used up

until 1994.

Q. Commercially?

A. Yes.

Q. And do you know when it began?

A. No.

Q. At what point were those cut/rolled expanded stems utilized in the Tobaccoville or Whitaker -- Whitaker Park process?

A. Those cut/rolled expanded stems are included in the casing/cutting process after final drying of the cut filler blend.

Q. Is there any process that was employed after '94 that was similar to the cut/rolled expanded stem process?

A. Yes.

Q. What's that?

A. It's, again, termed cut/rolled expanded stems.

Q. How is it different than the other one?

A. It's simply a larger process. And we use an outside vendor to process our flue-cured stems to make cut/rolled expanded stems.

Q. Who do you use?

A. The company is called Cres Tobacco Company.

Q. C-R-E-S?
A. Yes.
Q. Where are they located?
A. King, North Carolina.
Q. And do you know what effect this process has on the nicotine content of the stems?
A. No.
Q. Has there been a process similar to the KDN that's employed now?
A. Not to my knowledge.
Q. Okay. You stopped at the -- by the way, any time you want to take a break or if you want to --
MR. OPSITNICK: Do you want to take a break?
THE WITNESS: Let's do.
MR. OPSITNICK: Okay.
MR. MAISTROS: Do you want to take a break?
MR. OPSITNICK: Yes, please.
VIDEOGRAPHER: We're going off the record at 10:35 a.m.
(RECESS TAKEN FROM 10:35 A.M. TO 10:42 A.M.)
VIDEOGRAPHER: We're going back on

the record at 10:42 a.m.

BY MR. MAISTROS:

Q. What was the purpose of the Cres process?

A. The purpose of the Cres process was to utilize flue-cured stems in a more economical fashion than sending those stems to the reconstituted sheet process.

And I would like to clarify that from an earlier question, Mr. Maistros, is -- as unrelated to the KDN discussion that we were having, in that the Cres process was not for the purpose of reducing nicotine.

Q. Okay. Well -- well, KDN wasn't just stems, was it?

A. KDN, to my understanding, was burley tobacco.

Q. And Cres is just stems?

A. Cres is flue-cured stems.

Q. And the purpose -- you understand the purpose of the KDN process was to reduce nicotine content?

A. The purpose of the KDN process was to reduce the nicotine content of the burley tobacco.

Q. And, again, my question is: Is there any process that you know of that has substituted for the KDN process?
A. No.
Q. Did the KDN tobacco end up in all the Reynolds cigarettes?
A. I can't recall.
Q. Do you know what percent of KDN tobacco was in the recipe?
A. Approximately 40 percent inclusion.
Q. Forty percent of the tobacco in a cigarette was KDN when KDN was in -- working?
A. No, it was approximately 40 percent inclusion in the final blended strip.
Q. Now, is that 40 percent of burley or 40 percent of the tobacco?
A. Forty percent by weight of the tobacco.
Q. Was always -- was ammonia always used in the KDN process?
A. As far as I know.
Q. Was there any other chemical or processing aid that was used other than ammonia?
A. Not to my knowledge.
Q. Okay. Now, at the point we were back to Tobaccoville, you stopped at the casing

and cutting process. Could you pick up there and continue?

A. Yes. The casing and cutting process begins by bringing the final blended strip tobacco through a flavoring cylinder.

Q. This would include burley that's already been treated?

A. Yes.

Q. And what's in the flavoring cylinder?

A. Okay. If the burley tobacco has previously been flavored, then the total blend, the final blend, in the casing cylinder will receive glycerin.

Q. Is that a humectant?

A. Yes. And a lubricant for cutting.

Q. Is that the only flavorant at this point?

A. Basically --

MR. OPSITNICK: Objection.

BY MR. MAISTROS:

Q. Is that --

MR. OPSITNICK: Ambiguous.

BY MR. MAISTROS:

Q. -- is that really a flavorant?

A. As I said, the glycerin is a humectant and a lubricant for cutting.

Q. But it's -- but it -- this glycerin is applied in what you call the flavoring cylinder?

A. Or casing cylinder, as we term it.

Q. Now this cylinder will have flue-cured, burley, oriental, and recon in it?

A. Yes.

Q. Well, if it's got -- isn't all the burley treated?

A. No.

Q. Okay. So, the different grades will have treated and untreated burley?

A. No. Let me explain there.

Q. Okay.

A. If the burley received a flavoring in the final blended strip area, then the total blend, which includes the burley, will receive glycerin, a glycerin/water mixture. If the burley did not receive flavoring in the final blended strip process, then a total casing, or flavoring, is applied in the casing and cutting cylinder.

Q. And what's in the total casing?

A. Basically, the same ingredients as I had quoted earlier that are in the burley flavors.

Q. Why not just apply the casing once at this point in the process as opposed to treating the burley?

A. I'm not sure I understand.

Q. You've testified that if the burley was treated, you would just add glycerin. If it wasn't treated, all the tobacco would receive the type of flavorants that the burley would have received by itself, right?

A. Right.

Q. Why separate the burley and treat it earlier in the process? Why not treat all the tobacco at the same time?

A. Well, again, I'm not a product developer or a leaf scientist. But my understanding is that burley tobacco has a lower sugar content than flue-cured. And for some of recipes, we are asked to add the burley flavors.

Q. Okay. And it -- are you testifying it's the same things, cocoa, licorice, that are applied at this point in the process if they are applied?

A. Yes.

Q. Anything else that's applied?
A. Again, in much lesser quantities. Infrequently, I can think of some of the fig, prune, plum, or maple flavors that have been used and are used at certain times. Those are ones I can think of.
Q. This is still called casings?
A. Yes.
Q. And they're all flavorants. Is that their purpose?
A. As far as I know.
Q. Have you ever taken any internal courses to figure out what these flavorants' purposes are?
A. I attended a cigarette design class.
Q. Is that by Townsend or Norman?
A. Yes.
Q. Which one?
A. I recall Alan Norman involved and another gentleman. I cannot recall who the second gentleman was. It may have been Dave Townsend.
Q. Did you get his course outline or book?
A. Yes.
Q. Did you read it?

A. I read it as we were going through the class.

Q. Do you know up to this point in time if there's been anything else applied to or added to the tobacco that you haven't described?

A. None comes to mind.

Q. Okay. What happens after these casings are applied?

A. After casing, the tobacco will be at a elevated moisture level suitable for cutting. The tobacco will be cut --

Q. Sorry. How do you elevate the moisture level?

A. The casings are in liquid form.

Q. I -- I see. As a result of the casings, the moisture level's gone up in the tobacco?

A. And we also can apply water in the casing and cutting -- casing cylinder to achieve the moisture that we know is required for cutting.

Q. Okay. Is this the cutting, then, that puts the tobacco in the final strip form?

A. The final cut filler or cut tobacco form, yes.

Q. Is there anything applied during

this process?
A. No.
Q. Is there any dust left over that's collected up to this point in time that's reapplied?
A. That's reapplied, no. Dust is collected in environmental dust collection systems.
Q. Well, what happens to that dust?
A. It's discarded.
Q. Has it always been discarded?
A. As far as I know, it has been. Now, at one time the tower separator on the casing and cutting line dust collector, tobacco fines collector, that stream was returned back to the tobacco blend as the blend was being processed. The purpose of that was solely economics as a way to reduce tobacco loss.
Q. How is it returned?
A. Well, basically, the way the system works is the dust collector collects the fine material. And there was a screw conveyor underneath that transported the fine material to a can which was discarded. At one time at Tobaccoville we reversed those screw conveyors and added that material back onto the

casing/cutting line, onto the conveyor belt.

Q. How would it -- how would this dust reincorporate itself into the tobacco? You had --

A. Basically --

Q. You had to have, like, a water, fluid, or something?

A. No. The dust was mixed back with the main tobacco stream just as in the same form it was as it came away from the tobacco stream.

Q. How long was that process in effect?

A. I wouldn't really call it a process. This was simply a way to try to reduce waste from our process. Waste meaning toba -- clean tobacco fines. And that process was in effect from 1993 up, I think, through 1995.

Q. And why was it stopped?

A. Basically, we found that the tobacco fines were not actually going all the way through the process. They were being picked back up and pulled back out of the process by subsequent tobacco fines collection equipment. So the yield improvement that we were trying to get was not achieved.

Q. So after '95 the dust was then

discarded again?
A. Yes.
That was an experimental, again, reclaim effort that was done at Tobaccoville.
Q. What happens now that the tobacco is at the cutting stage, final cut filler?
A. Okay. After the tobacco is cut, you can imagine it's -- it's moist and warm. The tobacco is next exposed to a steam flotation chamber. The purpose of that chamber is to delaminate the cut tobacco; open it up.
Q. Okay. Anything in the steam?
A. No.
Q. It's always just been steam?
A. Yes.
Q. Then what happens?
A. After steam flotation, the cut tobacco enters a rotary steam dryer. The purpose of which is to dry the blend down to its final moisture target.
Q. How is that moisture target measured?
A. It's measured on line using infrared equipment. It's measured off line using an oven to ensure that the on-line instrument's

calibrated.

Q. Now this process you've been describing, at some point you were in charge of this overall process?

A. I'm in charge of the process control engineering effort in this process.

Q. So what you're testifying about, you have firsthand knowledge of?

A. Yes.

Q. This process, up to this point in time, are there any calibers, gauges, scientists standing around measuring nitrogen, nicotine, or other content of this tobacco up to this point in time?

A. No.

Q. So it's your testimony, as far as you know, that the last time the nicotine content was measured, if it was measured at all, was before the tobacco got to Whitaker Park or Tobaccoville?

MR. OPSITNICK: Objection. Mischaracterizes his testimony.

BY MR. MAISTROS:

Q. Is there any point up to this point in time where the nicotine content of the

tobacco's measured, as far as you know?
A. Yes.
Q. When?
A. Okay. Let's go back to the stemmery process. Samples are taken at the stemmery and are submitted to an off-site laboratory for nicotine analysis on an infrequent basis. Nicotine as well as sugar.
Q. And these samples that are taken, they're of the various grades?
A. Basically, the samples are taken from what we term grade belt runs in the stemmery.
Q. And when the tobacco -- after the stemmery process when the tobacco is stored in these different containers, they're at different grades; are they not?
A. There are different grades in the containers.
Q. And Reynolds knows the nicotine content of the different grades based on these outside tests?
A. Yes.
MR. OPSITNICK: Objection. Assumes facts not in evidence.
BY MR. MAISTROS:

Q. And when they're running these tests on the nicotine content of the different grades, we're still at the point where the tobacco is separated flue-cured, burley, oriental?
A. Yes.
Q. Does Reynolds send the tobacco out to test anything other than nicotine and sugar content?
A. None comes to mind right now.
Q. I'm talking about at this point in the stemmery process.
A. Not to my knowledge.
Q. So the only thing Reynolds independently tests at this point in the process is the nicotine and sugar content of the tobacco?
A. At this point in the stemmery, the samples are collected for nicotine and sugar analysis by research and development.
Q. Do they use more than one lab?
A. Not to my knowledge.
Q. Well, who do they use?
A. Our analytical laboratory in research and development.
Q. Oh, it's a Reynolds lab?

A. Yes.

Q. Is there an individual you're familiar with who does these tests?

A. I'm familiar with the management of the lab. I'm not familiar with the individuals who run the test.

Q. Who's currently manager?

A. Dr. Bob Lloyd.

Q. And how long has he held that position?

A. I don't know.

Q. Up to the point in time where we stopped where we were talking about cutting the tobacco, is the nicotine content or the sugar content analyzed in any fashion?

A. Samples are picked up of the group blended strip components, the reconstituted tobacco, and in the case and cutting operation, the cut/rolled expanded stems on an infrequent basis. And those samples are submitted to the R & D analytical laboratory for --

Q. Is this -- sorry.

A. For nicotine, sugar analyses.

Q. And this is a different test than is applied at the stemming process?

A. Not to my knowledge.

Q. This is the same test, then?

A. As far as I know. I'm not involved in the laboratory operations.

Q. I don't mean the actual test itself. I'm talking about the timing of the test. These tests are all done at the same time in the process on the stems, the group blends and the -- and the reconstituted tobacco?

A. No. The stemmery samples that we spoke of earlier, basically, there's five composited samples for an entire grade belt run. Grade belt run can be several million pounds of tobacco.

Q. Okay.

A. So those five samples would characterize that amount of tobacco, and those samples would be analyzed by the laboratory.

Q. Okay.

A. For the other components that we spoke of, the samples are picked up on an infrequent basis of once or twice -- I don't recall exactly the frequency per month.

Q. That's for the reconstituted tobacco?

A. Yes.
Q. And what else?
A. The cut/rolled expanded stems --
Q. Okay.
A. -- that we've talked about so far. And the group blended strip components.
Q. And the purpose of that is to measure nicotine content and sugar content?
A. As far as I know, yes.
Q. Okay. We're back to the point where the tobacco is being cut, okay, in the process.
A. We've gotten through the steam flotation chamber, the steam heated rotary dryer. And after the rotary dryer, we go through a primary and secondary tower separator system.
Q. Okay.
A. Those air tower separators are used to drop out and detangle any clumps of cut tobacco that might be nested together.
Q. Is there anything applied to the tobacco again at this point?
A. The cut/rolled expanded stems come into the flow at this point.
Q. Is -- are they treated?
A. They may be treated.

Q. With what?
A. Ammonia.
Q. Up to this point in time, the tobacco that's been added, other than the reconstituted tobacco, has not been treated with ammonia to your knowledge?
A. That's correct.
Q. So ammonia is applied to the stems for what purpose?
A. Again, I'm not a product developer. For my purpose they're applied to achieve product specifications.
Q. Which product specifications?
A. Product specifications that basically inform manufacturing of the amount of ammonia to apply to the cut/rolled stems.
Q. Okay. And who told you how much ammonia to apply?
A. The research and development product developers who develop the specifications.
Q. Do you know what the primary purpose of the ammonia being applied to the stems is?
A. No, I do not. The ammonia applied to the stems is applied to stems on a very infrequent basis. We are only beginning to use ammoniated

stems in our process. Previously, the stems were not ammoniated.

Q. When did you start using ammonia on the stems?

A. We're in the process of beginning that this year on a very limited basis.

Q. And you don't know why?

A. Again, to achieve product specifications.

Q. Does it have -- to your knowledge, does the use of ammonia have anything to do with facilitating the processing of the stems? Does it help in the processing?

A. No. Not to my knowledge.

Q. Does it have anything to do with taste of the final product?

A. It may. Again, I'm not a product developer.

Q. What form does the ammonia take that's applied to the stems?

A. The ammonia is in the form of diammonium phosphate.

Q. Are you familiar with the stemmery processes of any other tobacco manufacturer?

A. No.

Q. Have you ever read any memos

concerning Philip Morris's stemmery process?
A. No.
Q. Have you ever read any memos concerning Philip Morris's use of ammonia?
A. No.
Q. We haven't talked specifically about the reconstituted tobacco process. But at some point you mentioned it's used in this process or it comes into the process at Tobaccoville or Whitaker Park. Are you familiar with the reconstituted tobacco process?
A. Yes.
Q. Okay. I'm going to go back to that in a minute. But tell me what happens, then, after these stems go through this separator system or the tobacco goes through the separator system. It's not just stems, is it?
A. No. It's the cut tobacco blend, and the stems are applied at a low inclusion rate to the tobacco blend at this point. After the separation equipment, the tobacco goes into a final top flavor cylinder.
Q. Is that also known as top coatings?
A. I'm not familiar with the term coating.
Q. Top flavor cylinder, what happens

there?
A. The final flavors for the cut tobacco blend are added at that point.
Q. And what flavors are added?
A. The carrier is propylene glycol, which carries the flavors, and menthol for menthol products.
Q. Do you know what flavors are in the propylene glycol?
A. I do not.
Q. Are there recipes where they're set forth?
A. As far as I know, there may be.
Q. Well, these flavors are applied as part of the tobacco processing operation you had management responsibility over, correct?
MR. OPSITNICK: Objection. It mischaracterizes his testimony.
BY MR. MAISTROS:
Q. It's still within the Tobaccoville/Whitaker Park processes that now you're director over, right?
A. Where the top flavors are applied; is that the question?
Q. Yes.

A. Yes.

Q. Okay. How do you know what these top flavors are?

A. The top flavors come in as a mixture.

Q. Where do they come from?

A. They come from our facility that mixes up those flavors.

Q. What's that called?

A. Central flavoring and adhesive facility.

Q. Where is that located?

A. In the Whitaker Park compound.

Q. Who's in charge of that area?

A. Manufacturing.

Q. Is there a person that would have knowledge over that more so than you?

A. Perhaps.

Q. Who?

A. Specifically, the manager of that site is Mark Miller.

Q. How long has he been at Reynolds?

A. I don't know.

Q. Who devises these flavorings?

A. Research and development.

Q. Do you know any flavorings that are used at this point in the process?

A. No.

Q. Do you know if acetaldehyde is used in the tobacco manufacturing process in any fashion?

A. I don't know.

Q. How about levulinic acid?

A. I don't know.

Q. Do you know what levulinic acid is?

A. No.

Q. How are these top flavorings applied?

A. The cut tobacco blend is tumbled in the top flavoring cylinder, or top dressing drum, as we call it. And there's a spray header with nozzles located inside the drum. And the top dressing is sprayed on the tobacco in that fashion.

Q. Is ammonia used in this process at all?

A. Not to my knowledge.

Q. Are any more sugar or nicotine content tests run at this point in time?

A. No.

Q. What happens after these top flavorings are applied?

A. Basically, that completes the primary process. And the cut tobacco blend is placed in cut/filler bulkers for storage prior to going to the making and packing operation.

Q. The -- the making and packaging operation is still part of Tobaccoville and Whitaker Park?

A. Yes.

Q. Is there anything else applied to the tobacco subsequent to this?

A. No.

Q. Do you get into, as part of your job, overseeing the manufacturing of the filters?

A. Yes.

Q. Are you in charge, as part of your job, of purchasing the tobacco paper, the wrap?

A. Purchasing the paper? No.

Q. Do you have anything at all to do with the paper, tobacco paper wrap?

A. No. None other than using it to make the product.

Q. What involvement do you have with filters?

A. I'm sorry, I didn't understand.

Q. What involvement do you have with filters?

A. Making and packing complex, as we defined earlier, also has associated with it a filter maker. We have one filter maker for each making and packing complex where the filter rods are formed and sent over to the maker.

Q. Is there anything applied to the filter rods?

A. Yes.

Q. What?

A. We apply a plasticizer, and we may apply filter flavors.

Q. What kind of flavors?

A. The two that I'm aware of are Carbowax and menthol for certain products.

Q. Is there anything else applied to the filters?

A. Not to my knowledge.

Q. Are there different sizes of filters?

A. Yes.

Q. Different densities?

A. Different sizes of filters do exist. Sizes meaning circumference and length.

Q. Okay. How about the density of the filter?

A. No.

Q. Are you given filter recipes or specifications?

A. Yes. We have specifications that direct us how to construct the filter rods.

Q. Do all filters have flavors on them?

A. No.

Q. Who decides which filters get flavors?

A. Research and development, product developers.

Q. Do the filters have any materials applied to them, the purpose of which is to remove any of the chemical constituents in the smoke?

A. I'm not aware of those type product development issues.

Q. Would product development typically advise manufacturing if they were putting anything in the recipe that had the purpose of selectively removing certain chemical compounds in the smoke?

MR. OPSITNICK: Objection. Calls

for speculation.

BY MR. MAISTROS:

Q. Would you know that?

A. Not necessarily. Again, our job is to assemble the finished product according to the specifications.

Q. Have you manufactured any cigarettes that have carbon filters?

A. Yes.

Q. Which cigarettes?

A. I don't recall the exact brand styles. We have manufactured cigarettes with charcoal filters.

Q. How about -- I'm sorry. Scratch that. Have you -- have you heard of Winston Select?

A. Yes.

Q. How about EW?

A. I've heard of EW.

Q. What is that?

A. EW is a test product, test market product that we manufactured for a period of time.

Q. And how was it different than a typical Reynolds cigarette?

A. Again, I'm not a product designer. It used

a different filter and different tobacco blend.

Q. And was there anything different about the end smoke product of EW from a typical Reynolds cigarette?

A. Again, I don't -- I'm not aware of those product development, product design issues.

Q. Were there any different additives that were used in the filter?

A. Not to my knowledge.

Q. You know what nitrosamines are?

A. Not in the chemistry sense. I have heard the term, however.

Q. Where did you hear the term?

A. I've heard it in casual conversation with research and development personnel.

Q. Who?

A. I don't recall specific names.

Q. Are you aware of any tests Reynolds has conducted to determine nitrosamine levels in the cigarette smoke of its products?

A. I don't know.

Q. What tests are you aware of that Reynolds conducts to determine the chemical compounds that exist in the smoke of the cigarettes it sells?

A. Well, what do you mean by chemical compounds in smoke?

Q. Okay. Nitrosamines, benzopyrene?

A. I'm not aware of those tests. Again, in manufacturing, I'm not a part of the -- of any testing of that sort.

Q. Up to the point in time where you stopped describing the process where the tobacco is stored for final use in the rod, are there any additional sugar or nicotine content tests that are run that you are aware of?

A. The expanded tobacco is also tested for sugar and nicotine on an infrequent basis.

Q. Okay. When does the expanded tobacco enter the process you've described?

A. Just prior to the top flavor cylinder.

Q. And does that come from a different facility?

A. The expanded tobacco facility is located -- or process is located inside the Tobaccoville facility.

Q. And what tobacco finds its way to the expanded tobacco process?

A. Flue-cured and burley tobacco.

Q. Just those two?

A. As far as I know.

Q. There's no such thing as expanded reconstituted tobacco?

A. I'm not aware of expanded reconstituted tobacco.

Q. Is there expanded stems?

A. The flue-cured expanded stems that we spoke of earlier is a separate process. It's separate and distinct from the tobacco expansion process.

Q. Right. Now this expanded tobacco is added to the blend right before the final favors are added?

A. That's correct.

Q. And how much of the -- let's start over. Does -- do all Reynolds cigarettes contain expanded tobacco?

A. No.

Q. Which ones do or don't?

A. I can't recall a brand list. We have many brands, Mr. Maistros. The majority of our products contain some level of expanded tobacco.

Q. Do you know what percent?

A. Not -- not by brand style. I do not.

Q. Now, are the expanded stems added at the same point in time?

A. The expanded stems are added just prior to the top flavor cylinder, just prior to the expanded tobacco in the air tower separator.

Q. And those stems are just burley?

A. Flue-cured.

Q. Flue-cured.

Now, the expanded tobacco process, describe that for me.

A. Okay. Flue-cured and burley tobaccos are cut at Tobaccoville. They're sent over to the tobacco expansion process. There those tobaccos are exposed to carbon dioxide in a vessel called an impregnator. A thousand and eighty-five pounds of tobacco goes into an impregnator, and it's filled with carbon dioxide in a liquid form under pressure.

As the pressure is released in that vessel, the carbon dioxide freezes the tobacco, the tobacco is broken into smaller lumps, and is then exposed to a hot gas stream. Gas being hot air. When it's exposed to the hot air stream, the tobacco expands because the carbon dioxide basically evaporates. And the tobacco cell structure is puffed or expanded.

Q. Is there a -- somebody that decides

which flue-cured and burley tobacco goes to the expansion process?

A. There's a recipe for the tobaccos that go to the expansion process.

Q. And are there different grades of both flue-cured and burley that go to expansion?

A. Yes.

Q. Are there different grades of expanded tobacco after it's expanded?

A. There are different types of expanded tobacco.

Q. How many?

A. Approximately, twelve.

Q. What is G-13?

A. G-13 is a process that's no longer used. It's a expansion process that used freon as the expansion agent.

Q. And when -- what years was that in effect?

A. Approximately from 1969 to 1992 or '93.

Q. Freon was used in lieu of carbon dioxide?

A. That's correct.

Q. Were there -- have there always been approximately twelve different types of expanded

tobacco?

A. The twelve types of expanded tobacco are the types that we have currently.

Q. What distinguishes them?

A. Different things, such as the amount of moisture that we put into the expanded tobacco, or the amount of flue-cured or burley tobacco that make up the blend.

Q. Are there different types of expanded stems?

A. Yes.

Q. How many?

A. There's probably, I think, three.

Q. What distinguishes them?

A. The predominant cut/rolled expanded stem we use is a flue-cured expanded stem. There's a couple of others that I'm not sure what distinguishes them. They -- they go into other products.

Q. Is there -- are there any other flavorants or additives or processing aids used in the expansion process other than carbon dioxide?

A. That's it.

Q. When is the nicotine content of the

expanded tobacco measured?
A. The nicotine content of the expanded tobacco, a sample is collected at the point in time we change from one expanded tobacco type to another in the expanded tobacco process. That could be as small as one 55 to 60,000-pound batch up to several hundred thousand pounds.
One sample would be collected and sent to research and development for nicotine and sugar analysis.
Q. What's the purpose of using expanded tobacco?
A. The -- my layman's understanding, not being a product developer, is that expanded tobacco enables us to make our low tar or ultra-low tar products.
Q. Does it also save Reynolds money?
A. Yes.
Q. What was the original purpose, if you know? Whoever invented expanded tobacco, did they sit around saying we could use less tobacco per cigarette and save money? Or did they say we could make lower tar, lower nicotine cigarettes if we use expanded tobacco?
MR. OPSITNICK: Objection. Calls

for speculation.
BY MR. MAISTROS:
Q. Do you know?
A. I was not at Reynolds, obviously, in 1969 when the G-13 process was first used. I can't speculate as to what they discussed at that time.
Q. Do you know what band cast tobacco is?
A. No, I've only heard the term.
Q. Where did you hear it?
A. In the media.
Q. Reynolds doesn't have anything known as band cast?
A. I'm not sure what you mean by "band cast."
Q. Have you heard of Philip Morris's tobacco processing facility where they make expanded or reconstituted tobacco?
A. I've heard that our competitors use reconstituted tobacco.
Q. Okay. The expanded tobacco, is it stored in the same fashion until it's used at Tobaccoville or Whitaker Park as regular tobacco?
A. Yes, it's stored in bulkers.

Q. And it's not treated with anything before -- after it's expanded and before it's added?

A. No, it's not. Except water to bring it to a moisture target.

Q. Is there a -- from the expansion process where the carbon dioxide is applied, is there a byproduct solution that's left over after that process?

A. No.

Q. Well, describe for me in layman's terms how this carbon dioxide looks when it's applied. Is it just like a steam?

A. Carbon dioxide is applied as a liquid under pressure about 425 psi in the impregnator. At that point it -- it's allowed to soak into the tobacco. And then once you depressurize the impregnator, the carbon dioxide freezes, as I said earlier, and expands -- or it freezes the tobacco at that point. The expansion takes place later.

Q. And the nicotine sugar content is measured after that application of carbon dioxide?

A. Yes. It's measured in the finished

expanded tobacco product.

Q. The twelve or so different grades of expanded tobacco, do they have varying nicotine and sugar contents?

A. I don't know.

Q. Where's the reconstituted tobacco made?

A. Reconstituted tobacco is made at our processing facility in the Whitaker Park compound.

Q. Is this currently under your management?

A. I'm accountable for the process control engineering functions in reconstituted tobacco.

Q. Okay. And when you were manager, before you were director, you were directly responsible for reconstituted tobacco processing?

A. For the process control engineering function, I am directly accountable for tobacco processing including reconstituted tobacco.

Q. Okay.

MR. MAISTROS: What do we have, like, 15 minutes, John?

BY MR. MAISTROS:

Q. Describe for me, if you will, the reconstituted tobacco process.

A. The reconstituted tobacco process is, basically, a paper-making process. We use some of the same equipment that the paper industry does. Basically, we take stems, tobacco stems, medium-sized tobacco particles, and tobacco fines, or fine tobacco particles, and blend them together. And after blending, those blended streams are subjected to extraction.

Q. Where do you get them from?

A. Okay. The stems come from the stemming process, flue-cured and burley. Immediate -- excuse me?

Q. How do you -- how do you -- how does one know if the stems end up at the reconstituted tobacco process or at the expansion process?

A. It's a function of the length of the stem. The longer stems go to the cut/rolled expanded stem operation. The shorter stems will go to the reconstituted sheet operation.

Q. The stems that are sent to reconstituted tobacco facility, do you know where on the stalk they came from?

A. Yes.

Q. They're separated by stalk position?

A. As I had testified earlier this morning.

Q. But they still are when they're sent to reconstituted tobacco. When they first come to reconstituted tobacco, whoever receives them knows what stalk position they were on?

A. Yes.

Q. Okay, I'm sorry. I interrupted you.

A. Okay. After blending of the medium tobacco particles, the fine tobacco particles, and the stems, we mix those components with water. And we go through an extraction process to extract the water solubles from the pulp. The extract, as we call it, then goes to evaporation.

The pulp then goes through a refining operation to, basically, broom the fiber structure to enable us to form a sheet.

Q. How much is evaporated in the evaporation process?

A. Typically, you go in the evaporator at about 89 percent moisture and will come out of the evaporator at about 75 percent moisture.

Q. Now when the reconstituted, the original reconstituted product -- I don't know

what you call that. The stems, the fine leaves; is there a name for that?

A. The tobacco fines?

Q. At the beginning of the process, does this product have a name before it comes out as reconstituted tobacco?

A. I don't understand the question.

MR. OPSITNICK: Raw materials?

BY MR. MAISTROS:

Q. The raw materials, is there a name for that?

A. Again, stems, medium tobacco particles, and fine tobacco particles.

Q. Okay. Are there tests run at the beginning of the reconstituted process to determine the sugar and nicotine content of those particles and stems?

A. No.

Q. But those particles and stems had previously been subjected to a sugar and nicotine content test?

A. Yes.

MR. OPSITNICK: Objection. Mischaracterizes his testimony.

BY MR. MAISTROS:

Q. Okay. After the evaporation process, tell me how the extract is evaporated?
A. Basically, it's a steam evaporator that evaporates moisture. There's really not much more to it than that.
Q. Okay. Is there anything added up to this point in time other than steam?
A. Other than steam, no.
Q. And where is this extract sent?
A. Okay. The extract is then applied back to the same sheet that originally had the pulp separated from it as the sheet is formed.
Q. If you could trace the extract from, let's call it, Stem A, the beginning of the process, are you saying that the extract from Stem A is reapplied to Stem A at some point in time?
A. Well, I -- I couldn't take it to that fine a level of detail.
Q. Well, I'm trying to understand is this a continuous shift process? Or are there beginning --
A. Yes.
Q. -- and ends to each run?
A. Well, this basically is a continuous

process in that we will start up at the beginning of a week to make a certain reconstituted sheet. And we'll run that reconstituted sheet three shifts, five days for the entire week.

Q. And how many different types of sheets are there?

A. In total, we have about 16, I think.

Q. And what distinguishes them?

A. The in-feed materials of differing levels of stem, medium tobacco particles, or fine tobacco particles, or any additives that are applied to the sheet.

Q. What additives are used in the reconstituted process?

A. Glycerin and ammonia.

Q. What's the purpose of glycerin?

A. The purpose of glycerin is a processing aid, and it improves the physical characteristics of the sheet.

Q. In what way?

A. I don't know the chemistry involved.

Q. But does it -- does it make it easier to cut, easier to use, what?

A. It makes it less likely to degrade in the

proc -- in the subsequent processing stems.

Q. And what's the purpose of ammonia?

A. The purpose of ammonia is to achieve product taste and to improve sheet strength.

Q. What type of ammonia is applied?

A. Two types: Diammonium phosphate and ammonium hydroxide. And they're applied to the extract.

Q. Why are two different types used?

A. I don't know.

Q. How many of these 16 different types have diammonium phosphate or ammonia applied?

A. Approximately four sheets have diammonium phosphate and ammonium hydroxide applied to the extract.

VIDEOGRAPHER: Mr. Maistros, we have five minutes left on the videotape.

BY MR. MAISTROS:

Q. The 12 sheets that don't have either DAP or ammonia (sic) hydroxide applied, are they harder to work with and taste differently than the other tobaccos?

A. Now that -- that calls for me to speculate on product design or product performance. I -- I don't know.

Q. Your -- is it your testimony that you're aware that at least part of the reason for using ammonia in the reconstituted process is to improve taste?

A. We use ammonia to achieve product taste of those brands that use ammoniated sheet and to improve the sheet strength of the recon sheet.

Q. Is there anything other than ammonia that's used to improve sheet strength?

A. The glycerin is also a processing aid, as I had stated earlier.

Q. And that improves sheet strength?

A. It improves the process ability of the sheet.

Q. Is glycerin used in all 16 types?

A. No.

Q. Is the only purpose of glycerin is a -- to improve the physical characteristics of the tobacco?

A. That's my understanding.

Q. And is there anything other than ammonia or glycerin used to improve the sheet strength?

A. None comes to mind.

Q. So the reconstituted sheets that use

ammonia or glycerin have better sheet strength than the ones that don't?

MR. OPSITNICK: Objection. Assumes facts not in evidence.

BY MR. MAISTROS:

Q. Is that true or --

A. I don't really know.

Q. Do you know why ammonia was first used by Reynolds in the reconstituted tobacco process?

A. None other than what I have testified so far.

Q. And has it been used ever since you've been there?

A. Yes.

MR. MAISTROS: Okay, we have to change tapes.

VIDEOGRAPHER: We're going off the record at 11:34 a.m.

(OFF RECORD TO CHANGE TAPES)

VIDEOGRAPHER: This is Tape 2 of the videotape deposition of Tim Martin. We're going back on the record at 11:42 a.m.

BY MR. MAISTROS:

Q. Okay. The 16 different types of

reconstituted tobacco that you've cited exist, some of them have ammonia or diammonium phosphate applied to them, correct?

A. That is correct.

Q. And some of them have glycerin applied in the process?

A. That's correct.

Q. Are they applied in the same fashion?

A. Yes. Essentially, the same fashion.

Q. Are there any other processing aids, flavors, chemicals used other than those that you've mentioned in the reconstituted process?

A. The only -- only one that comes to mind is a limited use of cellulose at one point in time in certain products.

Q. What is cellulose?

A. My understanding is it's basically wood pulp. That cellulose, or wood pulp, was not used in any domestic products.

Q. That's tobacco substitute?

A. It supplied a tobacco substitute.

Q. What is the chemical symbol for ammonia, do you know?

A. No.

Q. Does NH3 sound about right or --
A. Well, I said "no" because it was either NH3 or NH4.
Q. Okay. Does NH3 sound right if I represent to you?
A. We could represent ammonia using NH3, if you prefer.
Q. And that ammonia is in what form, a liquid?
A. Which ammonia are you speaking of?
Q. That's applied in the reconstituted tobacco process.
A. Okay. The ammonia is in a liquid form.
Q. And the diammonium phosphate is different?
A. It's a different ammonia compound.
Q. And it's, like, a salt, is it not? Is it hard? It's not liquid?
A. It's not liquid when it comes to us.
Q. Yes.
A. It comes to us in bags.
Q. And how is it applied?
A. We take the bags, we debag the DAP, and mix it with water into a solution. And that solution is then applied to the extract of those

sheets that receive DAP.

Q. When is it applied in the process?

A. The DAP?

Q. Yes.

A. The DAP is applied to the extract prior to spraying the extract back onto the reconstituted sheet.

Q. So the steam water treatments applied to the sheet, there's an extract produced and then the extract has DAP added to it?

MR. OPSITNICK: Objection --

BY MR. MAISTROS:

Q. Before it's reapplied?

MR. OPSITNICK: Mischaracterizes his testimony.

BY MR. MAISTROS:

Q. Tell me --

A. The evaporation process is one of removing water, as I testified, from 89 percent down to 75 percent, typically. After evaporation there is a spray tank.

The DAP and ammonium hydroxide for those sheets that use those additives is applied prior to that spray tank. And from the spray

tank, then, the extract is applied back to the reconstituted sheet.

Q. Okay. So the extract that's been evaporated is sitting there, and DAP is added to it?

A. What do you mean by "sitting there"?

Q. Well, I mean -- I just want to get -- after the evaporation process is when the DAP is added to the extract? And then it's --

A. Yes.

Q. -- one spray back onto the tobacco. It's not a two-part process where the DAP is sprayed on separately, correct?

A. That's correct. It is not a two-part process. Think of this as a continuous process, as we said earlier.

When the pulp is separated from the extract, this is happening at the same time. So that the pulp is taking a different route up through the forming section of the process, forming a wet sheet. And at the same time the extract is going through evaporation, the spray tank and additives, if any, are applied. And then the extract is being sprayed back on that sheet --

Q. Okay.
A. -- as it's being formed.
Q. Is the ammonia, as opposed to the DAP, added at the same point in the process?
A. Essentially, at the same point. There are two tanks sitting side-by-side.
Q. And why is ammonia used in one and DAP in another?
A. You're referring to the tanks?
Q. Yeah.
A. Simply, the DAP is applied according to specification of pounds of DAP solution to pounds of dissolved solids in the extract. The ammonium hydroxide is applied based on an on-line pH measurement.
Q. Okay. Is the ammonium hydroxide applied to the extract before it's put back on the pulp?
A. Yes.
Q. As is the DAP?
A. Yes.
Q. Is it simultaneous?
A. No. There are two tanks in series. The DAP is applied first for those sheets that use DAP. And then it goes to the second tank, and

the ammonium hydroxide is applied.

MR. OPSITNICK: Applied to the extract.

THE WITNESS: To the extract.

BY MR. MAISTROS:

Q. Okay. And then that extract is reapplied to the pulp contains both diammonium phosphate and ammonium hydroxide?

A. For those sheets that use those additives, yes.

Q. Some sheets just use diammonium phosphate?

A. No. The four sheets that I testified earlier that use additives use both DAP and ammonium hydroxide.

Q. Then explain to me again. Maybe I missed it in layman's terms why you use both diammonium phosphate and ammonius (sic) hydroxide?

A. The ammonium hydroxide is used to achieve a pH target in the extract.

Q. And DAP doesn't serve that purpose at all?

A. DAP is applied; that's pounds of DAP solution to pounds of dissolved solid in the

extract.

Q. There's no correlation, though, between the DAP and pH values? No effort is made to use DAP to regulate pH?

A. Not from a manufacturing standpoint, no. It's as -- it is as I've stated.

Q. Okay. So if -- if you had to distinguish the purposes of the two, you would say that ammonius hydroxide had a function related to pH, where as DAP had a function related to processing --

MR. OPSITNICK: Objection. Mischaracterizes his testimony.

BY MR. MAISTROS:

Q. Does that?

A. I don't know.

Q. Does ammonius hydroxide -- the use of ammonius hydroxide have anything to do with making the sheet easier to work with?

A. The application of ammonia, as I said earlier, is used to achieve product taste and to improve sheet strength.

Q. Okay. And when you use the word "ammonia" are you saying in either DAP form or ammonia hydroxide?

A. Yes.

Q. But it's your understanding that the function of altering pH is solely a result of the use of ammonia hydroxide as opposed to DAP?

A. I don't know. I'm not --

MR. OPSITNICK: Objection.

THE WITNESS: I'm not aware of the chemistries involved, Mr. Maistros.

BY MR. MAISTROS:

Q. Okay. Well, how do you know that the ammonia hydroxide is used to reach a target pH?

A. Because we apply the ammonium hydroxide in the second tank, as I mentioned earlier. And there's a pH probe downstream of that tank in the pipe where the extract passes through. We have a feedback control loop that monitors the pH based on the probe and meters the ammonium hydroxide accordingly.

Q. And the ammonia hydroxide is only used on about four of the sheets?

A. I think that's correct.

Q. And what role does pH play in the end tobacco product?

A. I -- I don't understand the question.

Q. You said it was for the purpose of achieving a target pH. What role does that target pH play in the smoking process?
A. I don't know.
Q. Are there any other additives or processing aids that are used in the reconstituted tobacco process for the purpose of achieving a specific target pH?
A. Not to my knowledge.
Q. Are there different levels of pH that are targeted?
A. No. I think our pH target is constant.
Q. Do you know what it is?
A. Yes.
Q. What is it?
A. 6.3.
Q. Is there a similar measurement or a processing aid that's used in the regular tobacco processing facility to achieve a target pH?
A. What do you mean by "regular tobacco processing facility"?
Q. I mean other than reconstituted.
A. No.
Q. The only targeted pH has to do with

reconstituted tobacco?
A. Reconstituted tobacco. And we make adhesives, glues, that are used in assembling the finished product. PH is a measurement used in the production of adhesives. It relates to viscosity and, again, is used as a process control parameter in making of adhesives.
Q. Now you said that the ammonius hydroxide would be applied at the stage where any other additives are used. Do you know of other additives used in the reconstituted tobacco process?
A. None other than I've testified to.
Q. There's no flavorings applied during the reconstituted tobacco process?
A. We have one sheet that we're getting ready to use in a small-scale test that uses some other materials.
Q. What materials?
A. Uria.
Q. What is uria?
A. Uria is uria, from a manufacturing standpoint. I'm not aware of the chemistry.
Q. Do you know what -- where it comes from?

A. No, sir.
Q. Does it have anything to do with urine?
A. Not to my knowledge.
Q. Do you know what its purpose is?
A. Its purpose is to -- my standpoint, to achieve the product specification that calls for so much uria to be added to the web of the sheet.
Q. Does it have any effect on the pH?
A. I don't know.
Q. Is it being used commercially now?
A. It's in the process of being made and will be used in some limited products commercially.
Q. Are you familiar with Winston No Bull?
A. Yes.
Q. And the ad's correct; there's really nothing in Winston No Bull other than the tobacco and maybe some plasticizers in the filter?
A. That's correct.
Q. Does it use reconstituted tobacco?
A. Yes.
Q. And which of the 16 types? Which of

the 16 types of reconstituted tobacco?
A. It uses one of those 16 types of reconstituted tobacco in its tobacco blends.
Q. And there's no ammonia hydroxide or DAP used in that particular type?
A. There are no additives used in that reconstituted sheet.
Q. Do you know what sheet that is?
A. I believe -- I'm not absolutely certain of this because it's difficult to remember these many blends. I believe it's G-7-50. I am not certain of that.
Q. Now, is the ammoniated -- hydroxide ammoniated G-7 sheet referred to as G-7A?
A. At one time it was referred to as G-7A.
Q. What is it now?
A. Well, as I said, there are about 4 of the 16 sheets that use the additives of DAP and ammonium hydroxide. Sitting here right now, I don't recall the blend codes for those 4.
Q. Do you know what percentage of Reynolds cigarettes utilize ammoniated reconstituted tobacco?
A. Yes.
Q. What is that?

A. Approximately 27 percent.

Q. That means of all the cigarettes Reynolds sells, 27 percent have reconstituted tobacco that has had ammonia hydroxide or DAP applied to it?

A. Yes.

Q. What's Reynolds' best selling cigarette today?

A. Doral.

Q. Does that use DAP or ammonius hydroxide-treated reconstituted tobacco in it?

A. Again, you're -- you're asking me to remember the blend structures of which I said there are 16 different sheets. I can't recall at this point in time.

Q. Has there been any programs initiated at Reynolds in an effort to reduce the different types of reconstituted sheets?

A. Yes.

Q. Do they have any particular names attached to them?

A. There was a program begun last year called TMI, tobacco materials utilization. And I know the TMI doesn't mesh with the utilization. But, basically, that's what --

Q. That's just to confuse the lawyers.
A. No, I was going to clarify. That's what the program's purpose was. And what we were trying to do with that program for productivity reasons is to get to a number of sheets, base sheets, that were less in number than we had previously.

Because every additional sheet type you have means, at some point in time, a changeover. There's process waste associated with a changeover and lost productivity. That was one of the objectives of that program.

Q. You can only run one type of sheet at the same time?
A. That's correct.
Q. And there's only one reconstituted processing facility?
A. There are two, as I testified earlier this morning. Only one is currently in production.
Q. So at any given time, Reynolds is only making one type of reconstituted sheet?
A. That's correct.
Q. Where was the other one that went out of business?
A. We had a downtown facility here in

Winston-Salem that was no longer needed because of capacity.

Q. Okay. Other than the processes you've described thus far today, is there anything else you've done at Reynolds that has consumed large amounts of your time that you haven't talked about?

A. My employment history has been in manufacturing, as we've discussed.

Q. And those different -- I know you had, like, six different titles, but did they all evolve around the processes you've just described --

A. Yes.

Q. -- the last couple of hours?

A. Yes, that's correct.

Q. Was there any position you held that was a little different?

A. No.

Q. So, regardless of your title, you al -- you've always since you started at Reynolds had some involvement in this, either the reconstituted, the expanded, or the overall tobacco processing facilities?

A. Yes.

Q. Were you ever involved in any sort of product development projects?
A. Only from the standpoint that if a product development initiative resulted in a product that we were going to manufacture and offer for sale, my group would be involved in transitoriness that prototype up to a commercial scale in manufacturing to ensure that we could meet specifications on a commercial scale.
Q. Any that come to mind?
A. The No Bull Winston that you referred to earlier. We commercialized that product last year.
Q. Any others? Do you consider Eclipse a new product?
A. I'm not involved in the Eclipse project.
Q. Were you involved in Premier?
A. No.
Q. Did you have any role in Premier?
A. I was in casing and cutting operation, the primary processing during the time Premier was being developed. We processed some tobacco that was sent over to Premier.
Q. Where did Reynolds get the -- are you familiar with the structure of the Premier

cigarette?

A. No. Not in any specific detail.

Q. Are you aware that in addition to tobacco that Premier contained a tobacco extract that was applied to a part of the cigarette?

MR. OPSITNICK: Objection. Calls for speculation. Assumes facts not in evidence.

THE WITNESS: I've not been involved in the Premier project, other than what I testified in processing the tobacco.

BY MR. MAISTROS:

Q. And how did that processing differ than the regular tobacco or regular cigarettes?

A. It did not differ. The tobacco was brought in; it was cut through casing and cutting. We moisturized it to a target moisture, put it in containers, and sent it over to the Premier project.

MR. MAISTROS: Okay. Why don't we take a break for lunch, if nobody objects, and come back at 12:30. Is that okay?

MR. OPSITNICK: Fine.

VIDEOGRAPHER: We're going off the record at 12:00 p.m.

(RECESS TAKEN FROM 12:00 P.M. TO 12:37 P.M.)

VIDEOGRAPHER: We're going back on the record at 12:37 p.m.

BY MR. MAISTROS:

Q. Mr. Martin, did you have anything or any involvement at all in the preparation of any individuals that have testified before congress?

A. No.

Q. Are you familiar with the testimony that was given in '94 with respect to the issue of whether or not nicotine should be regulated?

A. I'm familiar with it through the media, yes.

Q. You had no involvement in either preparing Johnston or anyone else to testify?

A. No.

Q. Were you interviewed by the media since you've been employed at Reynolds?

A. No.

Q. You had no involvement in any shows that were done on Reynolds or any other tobacco company insofar as the manufacturing process is concerned?

A. What do you mean by "shows"?

Q. Prime Time, 20/20?

A. No.

Q. Day One?
A. None.
Q. Have you ever been interviewed by the media?
A. No.
MR. OPSITNICK: Objection. Asked and answered.
BY MR. MAISTROS:
Q. Have you ever attended any seminars or classes having to do with just the subject of nicotine while employed at Reynolds?
A. No.
Q. How about addiction?
A. No.
Q. Other than that cigarette design course you took, have you attended any other similar type of classes or courses?
A. Not to my knowledge.
Q. Ever attended any courses on toxicology or --
A. No.
Q. -- additives?
A. No.
Q. Flavorants?
A. No.

Q. Member of any professional societies or organizations?
A. Yes.
Q. Which ones?
A. The Institute of Electrical and Electronic Engineers.
Q. Did you attend meetings with that group or --
A. I have in times passed. I'm not currently active in attending meetings.
Q. Did you ever meet anyone that also worked for a tobacco company at any of those meetings?
A. No.
Q. Have you attended any conferences where there's representatives of other tobacco manufacturers present?
A. Yes.
Q. What type of conferences?
A. There's a tobacco show, as we term it. It's held each year in a different location. I have attended that tobacco show a couple of times.
Q. Where is it being held this year?
A. I don't know.

Q. Where was it last year?
A. I didn't attend last year. I don't know.
Q. Is it the same time of year every year?
A. Yes.
Q. When is it held?
A. I believe it's in the fall. I attended when it was in Raleigh, North Carolina, a few years ago.
Q. Did you speak?
A. No.
Q. Did anyone from Reynolds speak?
A. The particular one I attended in Raleigh, there was one speaker, I recall, from our company.
Q. Who was that?
A. Floyd Lockamy.
Q. What did he do or what does he do?
A. At that time, I cannot recall exactly what his position was. He's currently employed by Tobacco International Company.
Q. Do you manufacture any or process any tobacco at Tobaccoville or Whitaker that is used strictly outside of the United States?
A. Yes.

Q. Which tobacco?
A. I can't recall. Again, we have a number of blends, and some of those blends go in products that are used internationally.
Q. Are there any different additives or flavorants used for those tobaccos?
A. In some cases, yes.
Q. What's the difference?
A. The fig, prune, plum flavors that I mentioned earlier this morning are used in international products.
Q. Is that as opposed to or in addition to corn syrup sugar additives?
A. In some cases, in addition to.
Q. And why is that; do you know?
A. No.
Q. Is freon used in any manufacturing process?
A. No.
Q. Is the different -- 16 different types of reconstituted tobacco, are any of those used in international cigarettes?
A. Yes.
Q. Any particular ones?
A. No particular ones come to mind.

Q. You've described the process up to the point in time where the tobacco, as you will, was put in rod form and attached to the filter. Remember that testimony?
A. Yes.
Q. Is there anything subsequent to that point in time that's actually done to the tobacco itself in terms of treatments, flavors, top dressings?
A. No.
Q. So any flavorants, additives, et cetera, would have been applied up to the point in time that you described?
A. Yes, with one exception.
Q. What's that?
A. We are investigating a method to apply menthol at the cigarette maker to the tobacco blend.
Q. To the blend itself or the filter?
A. To the blend itself. I would consider that proprietary information.
Q. Is the use of either DAP or hydroxide ammonia -- is it hydroxide ammonia?
A. Ammonium hydroxide.
Q. Ammonium hydroxide. Is the use of

those two products by Reynolds employed in any fashion other than what you've testified about today?

A. No. My testimony reflects their use today.

Q. Have you authored any papers that have been published?

A. My master's thesis, which was done in pursuing my master's degree.

Q. And what was the topic?

A. The topic was The Optimal Location of Shunt Voltage Regulators On a Power Distribution System.

Q. Do you use that a lot at Reynolds?

A. Absolutely none.

Q. That's usually the case. That's the only paper you've published?

A. Yes.

Q. Have you written any materials, such as course outlines, that are utilized at Reynolds?

A. I have authored an overview, a process overview, which has been used before just to acquaint visitors to our process.

Q. That's the manufacturing process?

A. The manufacturing process.

Q. Does that include reconstituted and expanded tobacco?
A. It refers to the use of those materials.
Q. Do you have tours of your facility?
A. We had tours at the Whitaker Park manufacturing facility up through January 30th, 1998.
Q. And they no longer exist or --
A. That's correct.
Q. Why were they stopped?
A. Basically, due to declining interest in those tours.
Q. Now would that include the reconstituted and expanded tobacco processes?
A. No. Those tours included the making and packing process, a historical area set aside, and the souvenir store.
Q. Did Reynolds ever have tours of its reconstituted and expanded tobacco processes?
A. Not to my knowledge.
Q. Have you ever gone back and looked at any old literature at Reynolds to see what was going on at the company before you joined it in terms of research or manufacturing processes?
A. No, sir, not to any extent.

Q. You've never gone back and looked at, for example, literature to determine why Reynolds first employed ammonia in the process?
A. I've not investigated why the company initially used ammonia in its products.
Q. Are you familiar with the concept of bound versus unbound nicotine?
A. No.
Q. Protonated versus unprotonated nicotine?
A. No.
Q. Have you heard of nicotine analogues?
A. No.
Q. Do you know Pat Lippiello?
A. No.
Q. Walter Pritchard?
A. No.
Q. Tom Perfetti?
A. Yes.
Q. What contacts have you had with him?
A. I can recall the one discussion I had with Tom Perfetti relating to menthol. Specifically, we have to apply more menthol to the tobacco than eventually winds up in the tobacco; i.e.,

there's an overage of menthol that we apply to achieve menthol level. I had a discussion with Tom Perfetti asking him could he help manufacturing understand why that overage exists.

Q. Okay. Do you know what nicotine migration is?

A. No.

Q. Do you know how nicotine is processed by the human body?

A. No.

Q. Do you know what cotinine is?

A. I've never heard of it.

Q. Okay. Have you had any involvement in any biological research at Reynolds?

A. No.

Q. Pharmacological research?

A. No.

Q. Physiological research?

A. No, sir.

Q. And I think you testified no chemistry involvement, right?

A. That's correct.

Q. Have you had any involvement in the smoking and health issues at Reynolds?

A. No, sir.

Q. Have you had any involvement whatsoever in measuring the different chemical compounds in the actual cigarette smoke?

A. Okay. You asked "any involvement whatsoever." What chemical compounds are you referring to?

Q. There's five thousand of them in smoke. I'm just asking if you had any involvement during your employment at Reynolds in either analyzing or measuring any of the compounds that are in cigarette smoke?

A. Directly involved in analyzing or measuring any compounds, as you stated, no, I have not.

Q. Okay. Have you had any involvement whatsoever in looking at tobacco smoke?

A. No.

Q. Secondhand smoke?

A. No.

Q. Have you had any involvement looking at burn rates and how they affect cigarette smoke?

A. No.

Q. Do you know if there's anything added to cigarettes that has the effect,

intended or otherwise, of altering burn rates?
A. I'm not a product developer, as I've stated many times. But I understand that there are burn rate additives to certain cigarette papers.
Q. You don't know what those are?
A. I don't know the chemistry involved.
Q. Now, you mentioned earlier that you had a conversation with Perfetti something along the lines of, We need to add more menthol at the beginning to achieve whatever quantity you want at the end of the process, right? Do you know if that's true for nicotine?
A. I have no idea.
Q. Do you know if nicotine degrades or evaporates from beginning of the process to end?
A. Well, I know that there is a nicotine loss throughout our process, meaning that there's a nicotine reduction that takes place by default in making reconstituted tobacco.
Reconstituted tobacco, in terms of pounds in versus pounds out, has about an 85 to 90 percent yield. So inherently, there will be a loss of material in that process.
Q. You mentioned pH earlier. Do you know actually how pH effects, if at all, the

transfer efficiency of nicotine?
A. No, sir.
Q. I think you testified -- you don't even know what role pH plays in the smoking process?
A. No, I do not.
Q. Have you reviewed any memos or literature produced by Reynolds that address the issue of nicotine transfer efficiency?
A. No, I have not.
Q. Have you done any tests on cigarettes -- do you know what a Kentucky reference cigarette is?
A. No, sir.
Q. Were you involved in any projects that had as its purpose or intent the reduction of or elimination of chemical compounds in the cigarette smoke?
A. Not that I can recall.
Q. Were you involved in any cigarettes that had as its purpose or intent the goal of reducing the nicotine content of cigarettes?
A. No.
Q. Did you have any involvement whatsoever in any projects that had as its goal

altering the tar-to-nicotine ratio of cigarettes?

A. No.

Q. Do you know what role the tar-to-nicotine ratio plays in the cigarette?

A. No, sir. I'm not versed in smoke chemistry.

Q. Do you know what project VRP was?

A. Yes.

Q. What was that?

A. Again, my understanding is from a manufacturing perspective. And that project was one that I was told was reduced sidestream smoke.

Q. Eclipse?

A. What's the question regarding Eclipse?

Q. Is that related to Eclipse?

A. Not to my knowledge.

Q. Have you heard of Project RAN, R-A-N?

A. No.

Q. Project XDU?

A. I've heard that term. I -- I know nothing specific about it.

Q. How about the chemosol study?

A. Never heard of it.

Q. M2000 process?

A. No.

Q. J10 research?

A. No.

Q. Anything to do at all with the manufacture of the reduced sidestream smoke project cigarette that's sold in Japan?

A. What cigarette are you referring to?

Q. I'm sure I'll botch the name. Parimissimo or --

A. Pianissimo.

Q. Pianissimo. See, I told you.

Any involvement in that project?

A. Yes.

Q. What involvement?

A. We manufacture those products at Tobaccoville.

Q. Do you know how the sidestream smoke is reduced in that product?

A. No, sir.

Q. Up to this point in time, is there anything the attorney from -- where was it, Arizona?

A. Yes.

Q. -- asked you that I haven't asked you that you can think that jumps off the top of your head right now?

A. No, sir. I can't think of anything.

Q. Any areas you thought thus far that I would ask you about, I haven't asked you about?

A. Nothing stands out.

Q. Let me show you -- I'm going to show you some exhibits. Not a lot, okay? I'll just mark them Martin 1, if that's okay.

(EXHIBIT NUMBER 1 WAS MARKED FOR IDENTIFICATION)

(DOCUMENT HANDED TO WITNESS FOR REVIEW)

BY MR. MAISTROS:

Q. This is a document with very small numbers upside down, sort of in the left center of each page; first one is 508, looks like, 862474 going through 2493. Have you seen this document before? It's dated October 16th, 1991.

A. I'd like to take a minute to --

Q. Sure.

A. -- look at.

Q. Take your time.

(WITNESS REVIEWS DOCUMENT)

A. Mr. Maistros, I do not recall having seen

this document previously.

Q. Okay. What was your position in October of '91?

A. In October of 1991, I was process control engineering manager at the Whitaker Park manufacturing facility.

Q. And as part of that, would you have had any responsibility over the G-7 process?

A. No.

Q. Who was in charge of that; do you know? If you can turn to the second page, were any of those gentlemen or ladies?

A. I don't believe any of these people mentioned here have been in charge of the G-7 processing facility.

Q. Okay. On that second page, you see at the bottom where it says "Rich Sheet, XB, and Flat Sheet"?

A. Yes.

Q. Do you know what those are?

A. No.

Q. If you could turn to -- on the last page of the document, there's a description of each of those. And having read those, does it help you at all to remember what those three

processes are or were?

(WITNESS REVIEWS DOCUMENT)

A. It does not help me better understand those processes, as I did not have involvement in those processes.

Q. Do you know if Reynolds has developed a reel wound flat sheet tobacco -- tobacco paper product?

A. What do you mean by "reel wound flat sheet"?

Q. Well, if you don't know what it means, then I guess your answer is, no, you don't know if they've developed that?

A. Not -- not to my knowledge. Because I -- I don't understand what that means.

Q. Okay. The currently used reconstituted tobacco process by Reynolds is the one you've described in your testimony.

A. Yes, sir.

Q. And you know of no other?

A. The only other I'm aware of is a cast sheet process.

Q. What is that one?

A. That process goes into certain products. And I have not had any direct involvement in the

cast sheet process.

Q. Okay. Where is that facility?

A. That facility is in Germany.

Q. Is that used at all for American-sold cigarettes?

A. I believe it's used in the Eclipse product.

Q. Do you know how it differs from the reconstituted process you've described?

A. No, sir.

Q. Do you know if ammonia or diammonium phosphate is used?

A. I don't know.

Q. Do you know why it's used in Germany and not here?

A. I don't know.

Q. Have you ever seen the process?

A. No.

Q. Do you know who has supervisory responsibility over that process?

A. No.

Q. Okay. The document in front of you, I guess if you go in about eight pages to where it lists these five types of different reconstituted products -- do you see that page?

A. Yes.

Q. Are you familiar with these five that are listed, that is, G-7A, G-7-4, G-7-7, G-7-10, and G-7-25?

A. I'm familiar with G-7A. That was mentioned earlier this morning by you in this deposition. I have heard of G-7-7. And I am familiar with G-7-25.

Q. Okay. Is it your understanding that G-7A applied the ammonia to the sheet as opposed to the extract?

A. I don't know.

Q. Okay. And in 1991, do you know if the three that you cited were in use at Reynolds?

A. I'm not certain. I believe they were, but I'm not certain.

Q. Has Reynolds always had 16 different types of reconstituted tobacco?

A. That number, over time, has varied.

Q. Does it ever fall below -- I mean, at some point I guess there was one type -- on some day there was one type of reconstituted tobacco, or do you know?

A. I don't know.

Q. You don't know if they started off

with 10 and got up to 16 or started off with 2 and got up to 16?

A. My understanding is that there were -- it was a small number, and that number has varied over the years.

Q. Are there some reconstituted tobaccos where the extract is heated before it's reapplied?

A. Yes.

Q. Do you know why that's done?

A. No.

Q. I -- I assume, and correct me if I'm wrong, if you're making a particular type of reconstituted tobacco and you're heating the extract, all of the tobacco in that run will be -- will utilize heat-treated extract. You can't stop heating and start heating, can you?

A. Well, for products sheets that -- you use heat-treated extract; the extract is heated for the entire production run of that specific sheet.

Q. But you don't know why some is heated and some is not?

A. I don't know the chemistries involved, if any.

Q. On the next page, there's a G-7-26. It says "Dust Sheet with increased K-stems and G-7-25 processing." Do you see that?
A. I see it.
Q. Are you familiar with that product?
A. Only from the standpoint that dust sheet means inclusion of tobacco fines as a component just like stems and medium tobacco particles.
Q. Okay. And Magna, Sterling, and PL were cigarettes sold by Reynolds in '91?
A. Yes. That's my understanding.
Q. And K-stems is burley?
A. Yes.
Q. And a couple pages in there's a chart, the G-7-25 Process Flow.
MR. OPSITNICK: Couple of pages in from where you were.
MR. MAISTROS: From where we just were. I'm sorry.
BY MR. MAISTROS:
Q. See that?
A. Yes.
Q. It's got -- the last four digits upside down are 2485. Does that chart accurately describe the G-7-25 process flow as

you're familiar with it?
A. I don't --
MR. OPSITNICK: Objection. Seeks facts not in evidence.
THE WITNESS: I don't really know how to respond to that.
BY MR. MAISTROS:
Q. Okay. Is the chart -- in the little box on the left it says "Extract heated for one hour at 205 degrees." Is that a process you're familiar with?
A. Yes.
Q. Are you familiar with cooling that extract to 130 degrees Fahrenheit?
A. No. Not an intentional cooling step.
Q. Do you know if it's cooled to a specific temperature?
A. I don't know.
Q. Do you know if the extract pH is adjusted to 6.0 with NH3?
A. If the specification for G-7-25 at the time specified a pH adjustment with NH3, then this would be representative of that.
Q. Okay. Now, Exhibit 2 ...
(EXHIBIT NUMBER 2 WAS MARKED FOR IDENTIFICATION)

(WITNESS REVIEWS DOCUMENT)

BY MR. MAISTROS:

Q. It's also got -- it's got a plaintiff's exhibit sticker at the top from another case of 1153; do you see that?

A. Yes.

Q. And there's -- it's a four-page exhibit. First page appears to be a -- sort of a project explanations with some shorthand abbreviations and then an explanation. Are you familiar with any of those projects that are listed?

A. Let me take a minute and look.

Q. Okay.

(WITNESS REVIEWS DOCUMENT)

A. The first one mentioned, WA, no familiarity.

(WITNESS REVIEWS DOCUMENT)

CPF, no familiarity.

(WITNESS REVIEWS DOCUMENT)

Neither for MBF. Neither for XB-60.

(WITNESS REVIEWS DOCUMENT)

G-7-25, I've said earlier, was a G-7 sheet that we had made.

High fructose corn syrup, I am

familiar with its use, as I've testified earlier today.

(WITNESS REVIEWS DOCUMENT)

E-60, I'm familiar with as a tow processing unit. E-60s are used in manufacturing.

(WITNESS REVIEWS DOCUMENT)

SX, no familiarity.

(WITNESS REVIEWS DOCUMENT)

G-7-26, I have seen reference to that sheet before.

(WITNESS REVIEWS DOCUMENT)

Unique Top Dressings, I have no knowledge of. Neither for XDU. Neither for G-7-KDN.

Q. You have no knowledge of KDN being added to the G-7?

A. No.

Q. Is that either experimentally or commercially?

A. Neither.

Q. Now, earlier you testified, correct me if I'm wrong, that you noticed someone looked at the issue of using the KDN extract in the regular tobacco manufacturing process. Didn't

you say that?
A. No.
MR. OPSITNICK: Objection. Mischaracterizes his testimony.
BY MR. MAISTROS:
Q. So, to your knowledge, the KDN extract has never been used for research or other purposes? It's always been discarded?
A. As I stated this morning in an experimental project, the KDN extract, I believe, was looked at relative to the Prisms II project.
Q. You don't know if that's any connection to G-7-KDN?
A. I don't know.
Q. On the next page there's a couple more projects listed. Do you have any familiarity with them?
(WITNESS REVIEWS DOCUMENT)
A. No familiarity with REST.
(WITNESS REVIEWS DOCUMENT)
No familiarity with CA Web.
(WITNESS REVIEWS DOCUMENT)
Nor TC Filter.
(WITNESS REVIEWS DOCUMENT)
I have had experience with the SAM.

(WITNESS REVIEWS DOCUMENT)

I have no association with the REST process. The next one I can't read. There's an overtype on top of it.

(WITNESS REVIEWS DOCUMENT)

MR. OPSITNICK: It's STT.

THE WITNESS: I've never heard of that.

(WITNESS REVIEWS DOCUMENT)

THE WITNESS: I have no knowledge of G-7-TBF.

BY MR. MAISTROS:

Q. Okay. The next page lists both -- well, you look at it and you can tell me if you know what it lists, the next two pages dated October 10th, 1991.

A. What's your question?

Q. Do you know what this is a list of?

A. It appears to be a list of G-7 types.

Q. And expanded tobacco?

A. At the bottom of the page I see some G-13 types listed.

Q. Okay. And if I represent to you the next exhibit I'm going to show you, the C and the E and the D means currently used,

experimental, and discontinued. Are you familiar with those symbols? See in the second to last column, C/E?

A. I see what you're referring to.

Q. Okay. I'm going to show you the next exhibit that says that means currently in use, experimental, and discontinued; okay? If you'll wait till we get there, if you don't believe me. But, it's the next exhibit.

In '91, I'm asking you if you recall if these reconstituted tobaccos with the C next to them were used by Reynolds.

(WITNESS REVIEWS DOCUMENT)

A. Just from memory as stated earlier, that I had heard of G-7-1, I believe, and G-7-7. But again, to answer the question specific to 1991 as to which of these sheets were used, I don't know.

Q. How about for the expanded tobacco processes? Do you know if those first three were used?

(WITNESS REVIEWS DOCUMENT)

A. The first four, with the last one being experimental, G-13, 18, 23, and 24. Yes, I am familiar with those being used.

Q. And the last one, G-19C, that was used?
A. It may have been. I don't at this point in time recall it.
Q. On the next page it lists Cast Sheet Process. Are you familiar with those types?
A. No.
Q. Are you familiar with the Kimberly Clark reformulation expanded types? It may not be expanded but --
A. No, sir, I'm not.
Q. Are you familiar with the materials extrusion process of reconstituted tobacco strands?
A. No.
Q. How about the tobacco deprotonization process?
A. No, sir.
(EXHIBIT NUMBER 3 WAS MARKED FOR IDENTIFICATION)
BY MR. MAISTROS:
Q. Exhibit 3 is a similar listing of tobaccos with a cover sheet showing you on it, I believe, on the right-hand side about 12 names down. Is that you?
A. That is me.

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Q. Okay. Do you recall receiving this memo on or about April 29th of 1994?
A. If you'll give me a minute to take a look.
(WITNESS REVIEWS DOCUMENT)
I recall receiving a document of this type during that time frame.
Q. Okay. And what is the purpose of this document?
A. Again, I don't know the purpose from the individual who authored this document.
Q. Okay. Does this document accurately reflect, as far as you're aware, in April of '94 the different types of reconstituted and expanded tobaccos utilized by Reynolds?
A. Again, I would have to have faith to answer that positively in the author who wrote this document.
Q. Okay. Do you know E. J. Sohn?
A. Yes.
Q. Who is he?
A. Steve Sohn.
Q. What's his title?
A. I don't currently know his title.
Q. What was his title?
A. I don't recall.

Q. Did you know Mr. Sohn?
A. Yes.
Q. Is he a gentleman you trusted when you were -- knew him?
A. Yes.
Q. Now, you were manager, were you not, of process manufacturing in April of '94?
A. I was manager of process control engineering for the Whitaker Park manufacturing facility.
Q. As manager you would have had responsibility, would you not, over the different types of reconstituted expanded tobacco being manufactured by Reynolds?
A. Yeah. In process control engineering, I would have had accountability, as I do today, for working with research and development and transitioning new products or processes into manufacturing. And ensuring on an ongoing basis that process systems are in place to enable making our products to specifications.
Q. Okay. As you look at these descriptions of processed and reconstituted tobacco, do they appear to be a complete list of the different types of reconstituted and

expanded tobacco utilized by Reynolds in 1994?
A. I don't know. I can't sit here and say that this is a complete list or an incomplete list.
Q. How many different types of reconstituted tobacco does this document say were used by Reynolds in 1994?
A. Would you like me to count them?
Q. We can save the process if you'll agree with me that the C means current. Do you see that at the bottom of the page?
A. Yes, I see that.
Q. Would you agree that means currently being used, that is, in April of '94?
A. That's what's stated here.
Q. Why don't you just count for me the different types of reconstituted tobacco that were used by Reynolds in 1994.
(WITNESS COMPLIES AND COUNTS)
MR. OPSITNICK: I would like a continuing objection as to the foundation, please.
BY MR. MAISTROS:
Q. How many are listed?
A. I counted sixteen Cs on this page.

Q. So that matches pretty well with what you thought was the amount of reconstituted tobacco being used by Reynolds -- different types?

A. I don't recall.

Q. Do you know what the difference is between the first 28 and the ones that begin with the description that is saying, Bulk G-7-1, Bulk G-7-7 down at the bottom? For example, what's the difference between the G-7-1 that's up at the top and the Bulk G-7-1 that's under the description of G-7-31?

A. I -- I can't interpret what the difference is, if any, from this document.

Q. Under G-7-XX, do you see that?

A. Yes.

Q. High Stem Content Sheet; do you know what that is?

A. No. Not other than what's stated here.

Q. Does high stem have any relation to high on the stalk?

A. I don't know.

Q. Do you know what the regular G-7-1 recipe is?

A. No. Not off the top of my head.

Q. Are you given specifications for these different G-7-1s?

A. We were given specifications in production for the G-7 sheets that we make today.

Q. And for each of these numbers on the left-hand column, you'll have a different specification sheet for the type of reconstituted tobacco being made?

A. For the G-7 sheets that we manufacture, we will have a blend sheet that states what raw materials are to go into that G-7 sheet.

Q. And the amounts?

A. Yes.

Q. And who would have the best access to those documents?

A. The research and development scientist who develop the products.

Q. What person? If I was calling today and said I wanted the spec sheet for G-7-7, who would I call?

A. I think you would go to our specification system and access the particular item you're interested in.

Q. Is that on a computer?

A. Yes.

Q. I couldn't do that, could I? I mean, I couldn't go to a Reynolds computer and do that. Is there a person I would ask for?
A. There's any number of different people who could call up a specification for a specific item and show you the component, stems, medium and fine tobacco particles that go into it.
Q. What group has responsibility over that?
A. R & D.
Q. But is there a division within R & D?
A. That would be R & D brands.
Q. And who is currently in charge of R & D brands?
A. Skip Tinsley.
Q. Do you know if he's being deposed in the next week?
A. I don't know.
Q. Do the expanded tobaccos on the second page, are those consistent with your recollection of which types of expanded tobaccos existed in April of 1994?
MR. OPSITNICK: Again, I'd like an objection as to foundation, please.

(WITNESS REVIEWS DOCUMENT)

THE WITNESS: Your question?

BY MR. MAISTROS:

Q. Are those consistent with your understanding of the types of expanded tobacco being used by Reynolds in 1994?

A. I recognize some of these items as expanded tobacco items.

Q. Okay. You don't know if this sheet is accurate that the ones with Cs were currently used then?

A. Again, I did not author this document. I do not know, can -- nor can I speak to the validity of the document.

Q. Did you know whether or not, for example, G-13-18 freon expanded cut filler was discontinued in April of '94 or used?

A. In general, the freon base G-13 expansion process was terminated in the April/May time frame of 1994.

Q. '94 or '93?

A. Excuse me. 1993. Thank you for correcting me.

Q. That's only because you said '93 earlier. I didn't mean to correct you.

The memo was '94. Your -- your testimony is that after '90 -- April of '93, Reynolds didn't use freon in any of its processes?

A. That's correct.

Q. And would the same people, that is brands, R & D, have access to the recipes for these different expanded tobaccos?

A. Yes.

(EXHIBIT NUMBER 4 WAS MARKED FOR IDENTIFICATION)

MR. MAISTROS: I'm not supposed to make copies of this highly confidential one, so I didn't, other than to use it as an exhibit.

BY MR. MAISTROS:

Q. It's Exhibit 4. It's a memo dated January 14th, '94, from Carol Stafford. Do you know who she was?

A. I have heard of Carol Stafford.

Q. Do you know who she was?

A. No.

Q. How about Barbara Collie?

A. Excuse me. Excuse me. Let me back up. Carol Stafford works in the reconstituted sheet process.

Q. And what was her title, do you know,

in January of '94, or position?

A. I don't know her title.

Q. And how about Barbara Collie? Do you know who she is or was?

A. Could you spell that last name?

Q. C-O-L-L-I-E.

A. I'm not familiar with her.

Q. Okay. This is a -- I'm going to give it to you but, since it's my only copy, I have to read it before I hand it to you.

It lists, "Re: Poundage Used for Tobacco Additives-Tobacco Processing Division. From Carol Stafford to Barbara Collie. January 14, '94." And she lists five additives. Among them is Freon II, 267,294 pounds to be used at the Diet location. Do you know what that would have been used for?

(DOCUMENT HANDED TO WITNESS FOR REVIEW)

(WITNESS REVIEWS DOCUMENT)

A. No, I do not.

Q. Did you see those other compounds that are shown as being used?

(WITNESS REVIEWS DOCUMENT)

A. Could you repeat your question?

Q. Do you see the other -- other than

the freon, do you see the other compounds shown being used?

A. Carbon dioxide --

Q. Yes.

A. -- would have been used as an expansion agent in the Diet process.

Q. What else?

A. Anhydrous ammonia.

Q. Would have been used where?

A. As -- as stated here (indicating).

Q. Where? I just can't see it that far.

A. 605 Processing.

Q. And what is that? Is that a building?

A. It's a building. A location.

Q. You don't know where it is?

A. It's in the Whitaker Park compound. 603 Processing and 90 Processing. Those refer, again, to buildings.

Q. And the other compounds that are listed on that sheet, those were all in use in '94?

A. Again, I -- I did not author this document.

Q. No, I'm not asking you that. Do you

see the compounds that are listed?
A. Yes, I see those compounds.
Q. Other than the ones -- the two that you've cited, what are the other compounds listed?
A. The other compounds that are listed are methoprene --
Q. What is that?
A. Methoprene is a compound that's used to inhibit cigarette beetle infestation in tobacco.
Q. What are the other compounds?
A. Diammonium hydrogen phosphate.
Q. Where is that used?
A. It states on this sheet 603 Processing and 90 Processing.
Q. And do you know what's done at 603 and 90 Processing?
A. Those are reconstituted sheet tobacco plants.
Q. Do you know if that material was used in '94?
A. I've got some confusion here, Mr. Maistros. This is called diammonium hydrogen phosphate. My familiarity with that form of ammonia is diammonium phosphate. So I don't know if this

represents the same thing that I've testified to earlier today or not. Again, I'm not the author of this document.

Q. In your years overseeing the processing facility, are you aware of the use of diammonium hydro phosphate?

MR. OPSITNICK: Objection. Mischaracterizes his testimony.

BY MR. MAISTROS:

Q. Are you aware of the use of that compound?

A. No.

Q. How much of that compound is shown to be used on at least the date of that document?

A. I can read from the document 360,789 pounds.

Q. Okay. Is that location where that is supposed to have been used, according to that document, a location over which you had management responsibility in 1994?

A. No.

Q. And what's the next document -- or next compound?

A. I think we've covered them all.

(DOCUMENT HANDED BACK TO COUNSEL)

Q. Carbon dioxide is used at the -- for the expansion process?

A. That's correct.

Q. And do you have any idea what the use of this Freon II would have been, 267,000 pounds in April of '94?

A. I have no idea.

Q. Who had primary responsibility over the Diet compound in April of '90 -- or January of '94?

A. That would have been the vice president of tobacco processing.

Q. Who's that?

A. Leroy Smith.

Q. Is he still with Reynolds?

A. No.

Q. Do you know where he is?

A. He's at home, as far as I know.

Q. Do you know where he lives?

A. No.

Q. Do you know what town?

A. Yes.

Q. What town?

A. Walnut Cove, North Carolina.

Q. Is Leroy his first full name?
A. I'm not certain.
Q. Okay. This also lists anhydrous ammonia. Is that a compound you're familiar with?
A. To a limited degree, yes.
Q. And how is that used at Reynolds?
A. It was a form of ammonia, to my understanding, that was used prior to ammonium hydroxide.
Q. During the reconstituted tobacco process?
A. That's my understanding.
Q. And was it applied to the tobacco sheet or the extract?
A. To the extract.
Q. And for what purpose?
A. For pH adjustment.
Q. Any other purpose?
A. Not to my knowledge.
Q. Is Barbara Collie -- you don't know her.
A. I don't know her.
Q. Is Carol Stafford still employed at Reynolds?

A. Yes.

Q. This one I'm also not supposed to make a copy of.

(EXHIBIT NUMBER 5 WAS MARKED FOR IDENTIFICATION)

BY MR. MAISTROS:

Q. It's a chart describing tobacco operations, some of which you've described already today. And I'd ask you just to look at it and tell me if you've seen this document or any of the charts in the document.

(WITNESS REVIEWS DOCUMENT)

A. Mr. Maistros, I do not recall seeing this document previously.

Q. Okay. Are you familiar with the processes described in those charts?

A. Some more than others.

MR. OPSITNICK: I'd like a continuing objection to the foundation of this document.

BY MR. MAISTROS:

Q. You didn't create this document?

A. No.

Q. Do you know, as you looked at these documents, who might have drafted or created these documents?

A. No, sir. I do not.

Q. Have you seen documents similar to this?

A. Yes.

Q. Flow charts, if you will.

Where have you seen them?

A. I stated earlier that I had produced a process overview used with visitors and others who come through our process. I used the flow charting method to help explain in layman's terms how our processes work in those documents that I created.

Q. Okay. And if you look at the process that describes the G-7 production, do you see anything on that chart that does not fit what you recall of that process or does not look accurate?

(WITNESS REVIEWS DOCUMENT)

MR. OPSITNICK: At the time in which that process was done in 1994?

BY MR. MAISTROS:

Q. You're familiarity (sic) with the G-7 process, are you not?

A. I have familiarity with the G-7 process that we have today.

Q. Okay. Has it changed dramatically over the years?
A. I don't know how you would define "dramatically." I think we had a significant change last year. And that was the change of the forming sections from a rotoformer technology to a fourdrinier forming technology.
Q. How about the additives in the processing aids; have they changed dramatically over the years?
A. We've talked about one so far that comes to mind. The change from gaseous ammonia, anhydrous ammonia, to aqueous ammonium hydroxide.
Q. As you look at that chart in front of you, does that describe the G-7 process at any particular time, that you're familiar with?
A. This document was not authored by me --
Q. I understand all that.
A. -- and I don't know the time that it was created. And hence, I can't say what process it represented if I have no idea of the time that this document was created.
(DOCUMENT HANDED BACK TO COUNSEL)
Q. In the lower right-hand corner of

this particular document it says., June 12th, 1985 or '3, depending on how you look at it, which I understand has significance as far as you're concerned.

But when you joined Reynolds and were involved initially in the manufacturing process, if you look at these different charts of G-7, there's 1, 2, 3. And then there's G-7A; there's KDN, and that's clearly '85; G-13, et cetera.

Can you tell me whether or not those charts accurately describe those processes when you joined Reynolds?

A. I don't know, Mr. Maistros, because in -- to 1983, or '85 time frame, I wasn't here. When I joined Reynolds in 1986, I was not involved directly in the G-7 process. I was involved in the primary process to a major degree and the making and packing process to a lesser degree.

Q. Did you replace somebody when you joined Reynolds?

A. No.

Q. Who had more knowledge than you over reconstituted and expanded tobacco in the '85/'86 time frame?

A. I'll have to give that some thought.
Q. You're not allowed to say Ron Willard.
A. I'm not sure of a current employee of the company.
Q. How about a former employee? Those are sometimes better.
A. No one name sticks out.
Q. Was there a manager of the reconstituted tobacco process when you started at Reynolds?
A. Yes.
Q. Who was that?
A. I have no idea. Again, I was not directly involved in that process when I started with Reynolds.
Q. Was there somebody in charge of -- of expanded when you joined?
A. Yes.
Q. Who was that?
A. I'll have to try to search my memory. I believe the Whitaker Park expanded tobacco facility was managed by Ron Ray at the time I joined the company.
Q. Is he still with the company?

A. Yes.

Q. In what capacity?

A. He's a plant manager in Malaysia.

MR. OPSITNICK: Do you want to go there?

MR. MAISTROS: Okay. I have no further questions of you. Thank you very much for your time. You have the right to read this deposition. Your attorney can advise you of those rights.

MR. OPSITNICK: I'd like to reserve the right for signature and to correct the deposition, please.

VIDEOGRAPHER: We're going off the record at 1:40 p.m.

(SIGNATURE RESERVED)

(DEPOSITION CONCLUDED AT 1:40 P.M.)

JURAT

I, Timothy G. Martin, do hereby certify that I have read the foregoing transcript of my testimony, taken on Thursday, February 19, 1998,
and have signed it subject to the following changes:

PAGE	LINE	CORRECTION

DATE:

Sworn and subscribed to before me on this _____ day of _____.

NOTARY PUBLIC _____

51770 5411

STATE OF NORTH CAROLINA
COUNTY OF YADKIN

REPORTER'S CERTIFICATE

I, Linda N. Russell, a Notary Public in and for the State of North Carolina, do hereby certify that there came before me on Thursday, February 19, 1998, the person hereinbefore named, who was by me duly sworn to testify to the truth and nothing but the truth of his knowledge concerning the matters in controversy in this cause; that the witness was thereupon examined under oath, the examination reduced to typewriting under my direction, and the deposition is a true record of the testimony given by the witness.

I further certify that I am neither attorney or counsel for, nor related to or employed by, any attorney or counsel employed by the parties hereto or financially interested in the action.

IN WITNESS WHEREOF, I have hereto set my hand and affixed my official notarial seal, this the 5th day of March 1998.

Linda N. Russell, Notary Public
My Commission Expires 9/3/02

51770 5412

produced by RJRTC

G-7 process

HUMPHREY

REVIEW OF G-7 PROCESS AND PRODUCT

DEVELOPMENT PROGRAMS

October 16, 1991

produced by RJRTC

in

G-7 PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

HUMPHREY

Agenda

Objective	D. R. Pugh
Quality and Cost Premises	D. R. Pugh
Strategy	D. R. Pugh
Product Developments	L. J. Inman
Development of G-7-25/G-7-26/Super Sheet	T. W. Brown/ H. J. Young
Yield Improvement	T. W. Brown/ H. J. Young
Additional Applications - Rich Sheet - XB - Flat Sheet	T. W. Brown/ H. J. Young
Status of G-7 Field Line	T. W. Brown

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in
HUMPHREY

OBJECTIVE/STRATEGY

produced by RJRTC

in

HELMSTRIX

NEW PRODUCT DEVELOPMENT PROGRAMS

OBJECTIVE:

Develop a reconstituted tobacco sheet(s) which provides product benefits and maximum utilization of available materials and by-products.

produced by RJRTC

G-7 PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

HUMPHREY

QUALITY PREMISE

- G-7 is the largest blend component.
- G-7 smoking quality is poor in comparison to leaf.
- Improvement in G-7 smoking quality offers the greatest opportunity for product improvement.

COST PREMISE

- G-7 Process converts tobacco materials into a physical form suitable for conversion to cut filler.
- Utilize low cost raw materials such as dust and burley stems in G-7 to reduce the cost of value brands.
- G-7 process improvements and modifications to increase yield, filling capacity, quality and productivity offer an opportunity to control overall leaf costs.

produced by RJRTC

G-7 PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

STRATEGIES HUMPHREY

1. Continue efforts to upgrade and modify the smoking quality of G-7 to address product deficiencies.

2. Minimize the number of G-7's produced. Implement G-7 improvements which have a significant impact on smoking quality as replacements for existing G-7 types.

3. Use of optimal levels of G-7 in full-priced products.

4. Development of a "value" G-7 for maximum use of available raw materials, with application of quality improvements as available.

5. Use of excess G-7 capacity in savings products.

1.53

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in
HUMPHREY

CONFIDENTIAL: MINNESOTA TOBACCO LITIGATION

PRODUCT DEVELOPMENTS

51770 5419

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G-7 PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

HUMPHREY

- **G-7A**
  - Ammoniated sheet
  - Change to smoke pH
  - Addressed hot/harsh smoking attributes
- **G-7-4**
  - Reduced soluble extract (34%)
  - Milder smoking attributes
  - Used in WINSTON LT/CAMEL LT development
- **G-7-7**
  - Ammoniated extract
  - Replaced G-7A
  - Better process/less degradation/ more uniform/better controlled
- **G-7-10**
  - DAP addition
  - Cast Sheet Characteristics
  - Smoother smoking attributes
  - Used in DAKOTA
- **G-7-25**
  - Heat treated extract - DAP addition
  - Smoother smoking attributes
  - Used in CAMEL ULTRA
  - High potential for use across all Brands

produced by RJRTC

G-7 PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

HUMPHREY

COST INITIATIVES

- G-7-22
  - DUST SHEET produced on Rotoformer
  - Cellulose addition
  - Formula revised to accommodate available raw materials/by-products.
- G-7-26
  - Dust Sheet with increased K-stems and G-7-25 processing
  - Used in MAGNA, STERLING, and PL
  - Potential expansion to all Savings Brands including DORAL
  - Formula revised to accommodate available raw materials/by-products.

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in
HUMPHREY

produced by RJRTC

G-7 PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

HUMPHREY

OBJECTIVE
- Impart a smoother less harsh character to RJR brands through G-7 modifications.

TECHNICAL APPROACHES
- Extract Heating
- DAP addition (pH adjustment)

BRAND USAGE
- CAMEL ULTRA LIGHTS
- Potential for CAMEL LIGHT BOX
- G-7-25 processing in Savings Brands

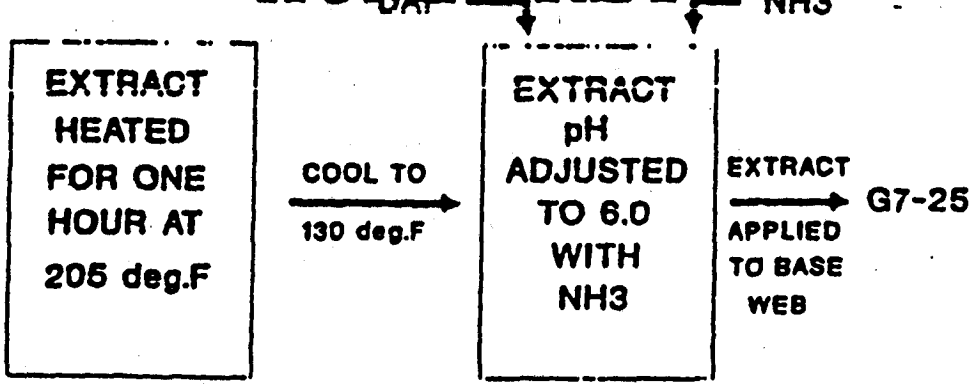
IMPLEMENTATION
- 603-1 Preliminary implementation complete
- 90-3 Start-up November, 1991
- 92 Under study, summer 1992 possible start-up

51770 5423

produced by RJRTC

G7-25 PROCESS FLOW

HUMPHREY



PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

H-26

HUMPHREY

OBJECTIVE

- Provide a reduced cost G-7 which can be included at a high percentage in savings brands.

TECHNICAL APPROACHES

- Dust inclusion
- Increased burley stems
- Increased stem content
- G-7-25 Processing

BRAND USAGE

- STERLING, MAGNA, PL
- DORAL to start early next year

IMPLEMENTATION

- Dust usage now supported from Shed #181
- Full dust extraction capability available at No. 603 in January, 1992.

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in
HUMPHREY

CONFIDENTIAL: MINNESOTA TOBACCO LITIGATION

YIELD IMPROVEMENT

51770 5426

produced by RJRTC

G-7 PROCESS AND PRODUCT
DEVELOPMENT PROGRAMS

HUMPHREY

YIELD IMPROVEMENT

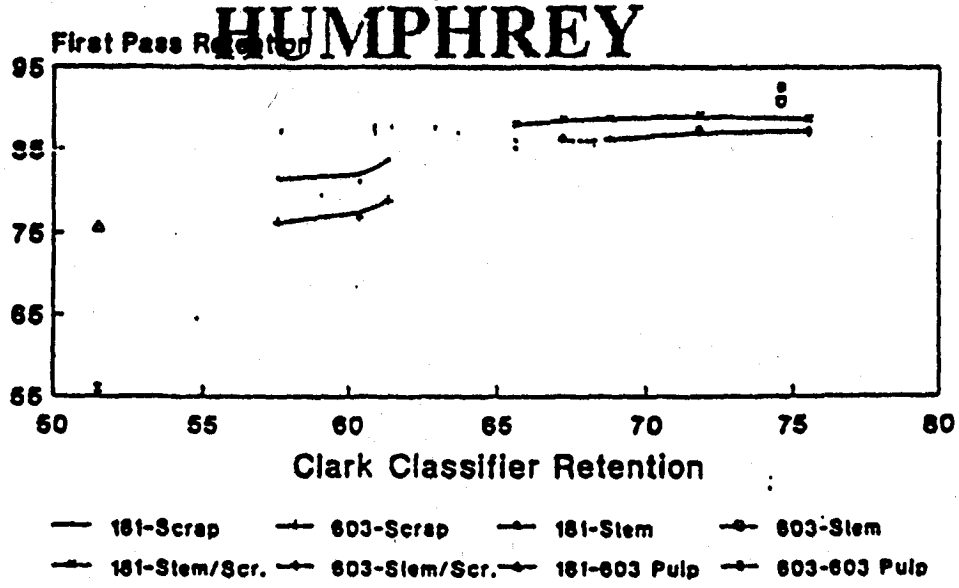
OBJECTIVE

Obtain a 10% yield increase (78 to 88%) in G-7 produced from available by-products.

produced by RJRTC

Screen Retention Tests in Clark Classifier vs Forming Screens

HUMPHREY



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PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

in

YIELD IMPROVEMENT

HUMPHREY

IMPROVED SUMP SCREENING 2-3%

- Start-up at No. 603 January, 1992

BROKE RECOVERY 1%

- Temporary installation complete No. 92
- Permanent system being requested for No. 92 and No. 603

IMPROVED EXTRACTION 5%

- Study work complete

ADVANCED RECOVERY 2%

- Continuous ultrafiltration belt filter being developed with Charles Lee.
- Pilot test planned for October, 1991

G-7 PROCESS AND PRODUCT
DEVELOPMENT PROGRAMS
in

HUMPHREY

INCREASED RECYCLE	**2%**
• Follow sump screening by significantly closing of white water system.	
HIGH YIELD FORMING	**6%**
• Scrap forming demonstrated without refining - October, 1991.	
• Full product evaluation - December, 1991.	
• Separate refining design to support high yield forming.	
ADVANCED FORMING	**3%**
• Develop short fourdrinier design - December, 1991.	
• Survey other forming techniques - January, 1992.	

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in
HUMPHREY

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G-7 PROCESS AND PRODUCT DEVELOPMENT PROGRAMS

HUMPHREY

ADDITIONAL APPLICATIONS

- **Rich Sheet**

  Through G-7 modifications impart a richer taste, having better tobacco flavor and improved aroma.

- **XB**

  Sensory/satisfaction improvement through tar to nicotine ratio alteration.

- **Flat Sheet Technology**

  Provide reel wound flat sheet to support Advanced Product Development—XDU, XA, Advanced Cigarette Paper.

PROJECT EXPLANATIONS

WA - Polyester web coated with an organic acid solution via rotogravure press. Web/Acid rods are made on a folded web filter maker and combined with a CA filter rod segment on mouthend. The filter reduces vapor phase smoke components that effect smoothness, mainly vapor phase nicotine

CPF - A special filter from FIL. It consists of a CA core surrounded by a corrugated paper sleeve. This filter yields high efficiency at low pressure drop.

MBF - A special filter from AFC. This filter is steam bonded CA with grooves and bores. This filter gives high efficiency at low pressure drop.

XB-60 - A cast sheet, G7 like material which contains up to 60% $CaCO_3$.

G7-25 - A G7 sheet produced with 1.5% Diammonium Phosphate (DAP) and heated extract (200°F for 1 hour).

HFCS - High Fructose Corn Syrup: Can be used to replace B2 (Corn Syrup) and B4 (Liquid Invert Sugar) in Burley casing. HFCS contains less extraneous materials than B4 and offers greater uniformity and higher sugar equivalency.

E-60 - Improvements to produce a filter of equal quality and performance at a reduced tow weight.

SX Technology - Develop a very low cost sub-generic cigarette product(s).

G7-26 - G7 with extract treated with 3% DAP and heat prior to reapplication to the base web

Unique TDR's - Top dressings which have unique properties such as improving the perception of aftertaste.

XDU Alternative - New product development which minimizes TPM and smoke and biological activity and simplifies mainstream smoke chemistry. There are currently two types of XDU - tobacco burning and tobacco heating.

G7-XDN - Process by which nicotine from the XDN process is added to G7.

PROJECT EXPLANATIONS

REST-KDN - Process by which whole or partial blend is [illegible] extracted, supplemented with nicotine from the KDN process and reapplied to the blend.

CA Web - A paper-like, cellulose acetate material produced by KC with raw materials (fibrets) from Celanese. This material is corrugated and formed into filter rods which then are combined with CA segments. This project is not currently active.

TC Filter - Filter type which keeps mainstream smoke and ventilating air separate until exiting the filter, thus producing more impact from lower 'tar'.

"SAM" - SAM Unit - Hauni add-on to the tipper which can selectively sample according to type of reject. Provides developer a more consistent read on true rejects due to loose ends, soft segments, etc. Currently installed (for evaluation) on Pilot Plant Maker #2.

REST - Re-Establishment of Solubles to Tobacco - The removal of all water solubles from a tobacco source. Selective treatment of that aqueous extract followed by reapplication to the insoluble portion of the blend.

[illegible] - Polyester web coated with a water soluble tobacco extract. By utilizing a water soluble tobacco extract coated on a hydrophobic substrate material (web) tobacco taste can be delivered through the smoke aerosol by the water and tpm generated while smoking the cigarette.

G7-TBF - Heat-treated G7 extract used as a flavor enhancer.

PROCESSED \ RECONSTITUTED TOBACCO

SECRET

REVISED October 10, 1991

Item ID.	Description	C/E	Where Used
Paper Sheet Process:			
G7-1	Regular G7-1 Recipe	C	R&M/FF,LT,ULT
G7-1 TI	Isolated G7-1 for RJRTI	C	R&M/FF,LT,ULT
G7-2	Regular G7-1 Ammoniated	C	R&M/FF,LT,ULT
G7-2 TI	Isolated G7-1 Ammoniated	C	R&M/FF,LT,ULT
G7-3	Intermediate & Water Solubles	C	R /FF,LT
G7-4	Intermediate & W.S. Ammoniated	C	R /FF,LT
G7-5	Additive Free, Canadian Market	C	RJRTI
G7-6	Add. Free Ammoniated, Canadian Mkt.	C	RJRTI
G7-7	G7-1 Ammoniated Extract	C	R&M/FF,LT,ULT
G7-8	Regular G7-1 Denicotinized	E	R&M/ LT,ULT
G7-9	Interned. & W.S. Ammoniated Extract	C	R /FF,LT
G7-XX	High Stem Content Sheet	C	RJRTI
G7-XXA	High Stem Ammoniated Sheet	C	RJRTI
G7-BC	100% Flue-cured Stem & Scrap Sheet	C	RJRTI
G7-10	DAP Treated G7-1	C	R /FF,LT
G7-11	Interned. & W.S. + DAP	E	R / LT
G7-12 A	Reconstituted Tob. Sheet (CaCO3)	E	R / LT,ULT
G7-12 B	RTS (Carbonized Craft)	E	R / LT,ULT
G7-12 C	RTS (CaCO3, Carbonized Craft)	E	R / LT,ULT
G7-15	Heavy Extract Reconstituted	E	R&M/FF,LT,ULT
G7-16	G7-7 with Added Sugar	E	R&M/FF,LT,ULT
G7-17	G7-BC with DAP Treatment	E	RJRTI
G7-18	G7 Sheet with tobacco salts added	E	R / ULT
G7-19	G7 Sheet with cellulose extender	E	R&M/FF,LT,ULT
G7-20	G7 Sheet with dust	E	R&M/FF,LT,ULT
G7-21	G7 Sheet + dust + cellulose	E	R&M/FF,LT,ULT
G7-23	G7 Sheet + dust + cellulose + TBP	E	R&M/FF,LT,ULT
G7-24	G7 Sheet +dust+cellulose+DAP+TBP	E	R&M/FF,LT,ULT
G7-25	G7 Heat Treated Extract + DAP + NH,	E	R&M/FF,LT,ULT
G7-26	G7 Sheet + dust + DAP	E	R&M/FF,LT,ULT
Expanded Tobacco Process:			
G13-18	Freon Expanded Cut Filler	C	RJRTI
G13-23	Freon Expanded Cut Filler	C	R&M/FF,LT,ULT
G13-24	Freon Expanded CKPL Blend	C	R&M/FF,LT,ULT
G13-26	Freon Expanded CKPL Blend + CRS	E	R&M/FF,LT,ULT
G14-1	Expanded Cut Rolled Stems	E	R&M/FF,LT,ULT
G18-1	Propane Expanded Process (PEP)	E	R&M/FF,LT,ULT
G19	Carbon Dioxide Expanded Cut Filler	E	R&M/FF,LT,ULT
G19 C	CO_2 Expanded Cut Filler for Canada	C	RJRTI

PROCESSED / RECONSTITUTED TOBACCO

SECRET

REVISED October 10, 1991

Cast Sheet Process:				
G15-1	Regular 37 Recipe	Z	R	/FF,LT
G15-2	100% Dust Recipe	Z	R	/FF,LT
G15-3	Dust & Burley Stem Recipe	Z	R	/FF,LT
G15-4	Binder & Char Recipe	Z	R	/ LT,ULT
G15-5	Binder, Char & CaCO3 Recipe	Z	R	/ LT,ULT
Kimberly Clark Reformulation:				
G16-3	KC-E; G7 Blend Change	Z	R&M/FF,LT	
G16-4	KC-H; G7 Blend Change	Z	R&M/FF,LT	
G16-5	KC-IC; G7 Blend Change	Z	R&M/FF,LT	
G16-6	KC-JC; G7 Blend Change	Z	R&M/FF	
G16-7	KC-L; G7 Blend Change	Z	R&M/FF,LT	
G16-8	KC-M; G7 Blend Change	Z	R&M/FF,LT	
G16-9	Kentucky Reference-1R4F Tobacco	Z	R /FF	
G16-10	RTB-1 Non Dust Sheet	Z	R /FF	
G16-11	RTB-2 Dust Enriched Sheet	Z	R /FF	
Materials Extrusion Process:				
G17-1	Reconstituted Tobacco Strands	Z	R&M/FF,LT	
Tobacco Depr[illegible]nization Process:				
G20	Reduced-protein tobacco sheet	Z	R&M/FF,LT,ULT	

SBH

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NOTE: Exercise confidentiallity in sharing processed tobacco Item Id. Guide

RJR INTEROFFICE MEMORANDUM

TO: Distribution

FROM: E. J. (Steve) Sohn

DATE: April 29, 1994

SUBJECT: Revised Item Id. Codes for Processed/Reconstituted Tobaccos

Please replace and update your Processed Tobacco Item Identification guide with the attached document. New additions are highlighted for your attention.

As we anticipate innovative ideas and improved materials, this summary may not have captured all the creativity in materials development. Please, contact me at 741-4134 or send a document by FAX to 741-7876 which could update the summary for processed / reconstituted tobaccos.

Thank you,

Steve

E. J. (Steve) Sohn

PROCESSED \ RECONSTITUTED TOBACCO

SECRET

REVISED April 29, 1994

Item ID.	Description	C/E/D	Where Used
Paper Sheet Process:			
G7-1	Regular G7-1 Recipe	C	R&M/FF,LT,ULT
G7-1 TI	Isolated G7-1 for RJRTI	D	R&M/FF,LT,ULT
G7-2	Regular G7-1 Ammoniated	D	R&M/FF,LT,ULT
G7-2 TI	Isolated G7-1 Ammoniated	D	R&M/FF,LT,ULT
G7-3	Intermediate % Water Solubles	D	R /FF,LT
G7-4	Intermediate % W.S. Ammoniated	D	R /FF,LT
G7-5	Additive Free, Canadian Market	D	RJRTI
G7-6	Add. Free Ammoniated, Canadian Mkt.	D	RJRTI
G7-	G7-1 Ammoniated Extract	C	R&M/FF,LT,ULT
G7-8	Regular G7-1 Denicotinized	D	R&M/ LT,ULT
G7-9	Intermed. %W.S. Ammoniated Extract	D	R /FF,LT
G7-XX	High Stem Content Sheet	C	RJRTI
G7-XXA	High Stem Ammoniated Sheet	D	RJRTI
G7-BC	100% Flue-cured Stem & Scrap Sheet	C	RJRTI
G7-10	DAP Treated G7-1	D	R /FF,LT
G7-11	Intermed. % W.S. + DAP	D	R / LT
G7-12 A	Reconstituted Tob. Sheet (CaCO3)	D	R / LT,ULT
G7-12 B	RTS (Carbonized Craft)	D	R / LT,ULT
G7-12 C	RTS (CaCO3, Carbonized Craft)	D	R / LT,ULT
G7-14	Extract Reconstituted	D	R&M/FF,LT,ULT
G7-16	G7-2 with Added Sugar	D	R&M/FF,LT,ULT
G7-17	G7-BC with DAP Treatment	E	RJRTI
G7-18	G7 Sheet with tobacco salts added	D	R / ULT
G7-19	G7 Sheet with cellulose extender	D	R&M/FF,LT,ULT
G7-20	Sheet with dust	D	R&M/FF,LT,ULT
G7-21	G7 Sheet + dust + cellulose	E	R&M/FF,LT,ULT
G7-23	G7 Sheet + dust + cellulose + TBF	D	R&M/FF,LT,ULT
G7-24	G7 Sheet +dust+cellulose+DAP+TBF	D	R&M/FF,LT,ULT
G7-25	G7 Heat Treated Extract +DAP +NH_3	C	R&M/FF,LT,ULT
G7-26	G7 Sheet + dust + DAP	D	R&M/FF,LT,ULT
G7-27	G7-XX Ammoniated Extract	C	R /FF,LT,ULT
G7-28	G7-26 Dust Sheet without DAP	C	R&M/FF,LT,ULT
G7-29	Washed K Stem +32% C Dust Sheet	C	R&M/FF,LT,ULT
G7-30	*80% MKS, 20% Scrap + Humectant*	*E*	*R&M/ LT*
G7-31	Bulk G7-1, 100% OS, for CFB + BPU	C	R&M/FF,LT,ULT
G7-32	Bulk G7-7, 100% OS, for CFB + BPU	C	R&M/FF,LT,ULT
G7-33	Bulk G7-25, 100% OS, for CFB + BPU	C	R&M/FF,LT,ULT
G7-34	Bulk G7-28, 100% OS, for CFB + BPU	C	R&M/FF,LT,ULT
G7-35	Bulk G7-1, 100% OS, single grd.ship	C	R&M/FF,LT,ULT
G7-36	Bulk G7-7, 100% OS, single grd.ship	C	R&M/FF,LT,ULT
G7-37	Bulk G7-25,100% OS, single grd.ship	C	R&M/FF,LT,ULT
G7-38	Bulk G7-28,100% OS, single grd.ship	C	R&M/FF,LT,ULT
G7-39	*100% MKS, No Water Solubles*	*E*	*R&M/FF,LT,ULT*

Note: C = Current, E = Experimental, & D = Discontinued

51770 5439

51233 7858

SECRET

PROCESSED / RECONSTITUTED TOBACCO

REVISED April 29, 1994

Item ID.	Description	C/E/D	Where Used
Expanded Tobacco Process:			
G13-18	Freon Expanded Cut Filler	D	RJRTI
G13-23	Freon Expanded Cut Filler	D	R&M/FF,LT,ULT
G13-24	Freon Expanded CKPL Blend	D	R&M/FF,LT,ULT
G13-26	Freon Expanded CKPL Blend + CRS	D	R&M/FF,LT,ULT
G14-1	Flue-cured Cut Roll Expanded Stems	D	R&M/FF,LT,ULT
G14-2	Burley Cut Roll Expanded Stems	E	R&M/FF,LT,ULT
G14-3	F-C & K Cut Roll Expanded Stems	E	R&M/FF,LT,ULT
G14-4	U.S./Offshore Grown Stems: Processed in U.S.	C	R&M/FF,LT,ULT
G14-5	Canadian Grown Stems: Processed in Canada	C	R&M/FF,LT,ULT
G14-7	Domestic Grown Stems Processed in Canada	C	R&M/FF,LT,ULT
G14-8	Cut Rolled Expanded Stems Bulk [illegible] 100% Offshore Tobacco	C	R&M/FF,LT,ULT
G18-1	Propane Expanded Process (PEP)	E	R&M/FF,LT,ULT
G19-1	Carbon Dioxide Expanded Cut Filler	C	R&M/FF,LT,ULT
G19-2	Carbon Dioxide Expanded Cut Filler	C	R&M/FF,LT,ULT
G19-3	Carbon Dioxide Expanded Cut Filler	E	R&M/FF,LT,ULT
G19-4	Carbon Dioxide Expanded Cut Filler	C	R&M/FF,LT,ULT
G19-5	Carbon Dioxide Expanded Cut Filler	E	R&M/FF,LT,ULT
G19-6	CO_2 Expanded CKPL Blend	E	R&M/FF,LT,ULT
G19-7	[illegible] Expanded CKPL Blend + 39% CRES	C	R&M/FF,LT,ULT
G19-8	G19-1 + 35% CRES	C	R&M/FF,LT,ULT
G19-9	G19-1 + 16.5% CRES	C	R&M/FF,LT,ULT
G19-10	Cancelled	D	
G19-11	G19-1 + 39.25% CRES	E	R&M/FF,LT,ULT
G19-12	G19-1 + 47% CRES	E	R&M/FF,LT,ULT
G19-13	G19-1 + 41.5% CRES	E	R&M/FF,LT,ULT
Cast Sheet Process:			
G15-1	Regular G7 Recipe	E	R /FF,LT
G15-2	100% Dust Recipe	E	R /FF,LT
G15-3	Dust & Burley Stem Recipe	E	R /FF,LT
G15-4	Binder & Char Recipe	E	R / LT,ULT
G15-5	Binder, Char & CaCO3 Recipe	E	R / LT,ULT
G15-6	Burley Stem, F-C & Stemmary Dust	E	R /FF,LT,ULT
G15-7	WKS, Mixed Scrap, Binder & Humectant	E	R /FF,LT,ULT
Materials Extrusion Process:			
G17-1	Reconstituted Tobacco Strands	E	R&M/FF,LT
Tobacco Deproteinization Process:			
G20	Reduced-protein tobacco sheet	E	R&M/FF,LT,ULT

51770 5440

51233 7859

1993

TO: BARBARA COLLIE
FAX: 741-0815

FROM: CAROL STAFFORD
DATE: 1/14/94 EXT. 5582

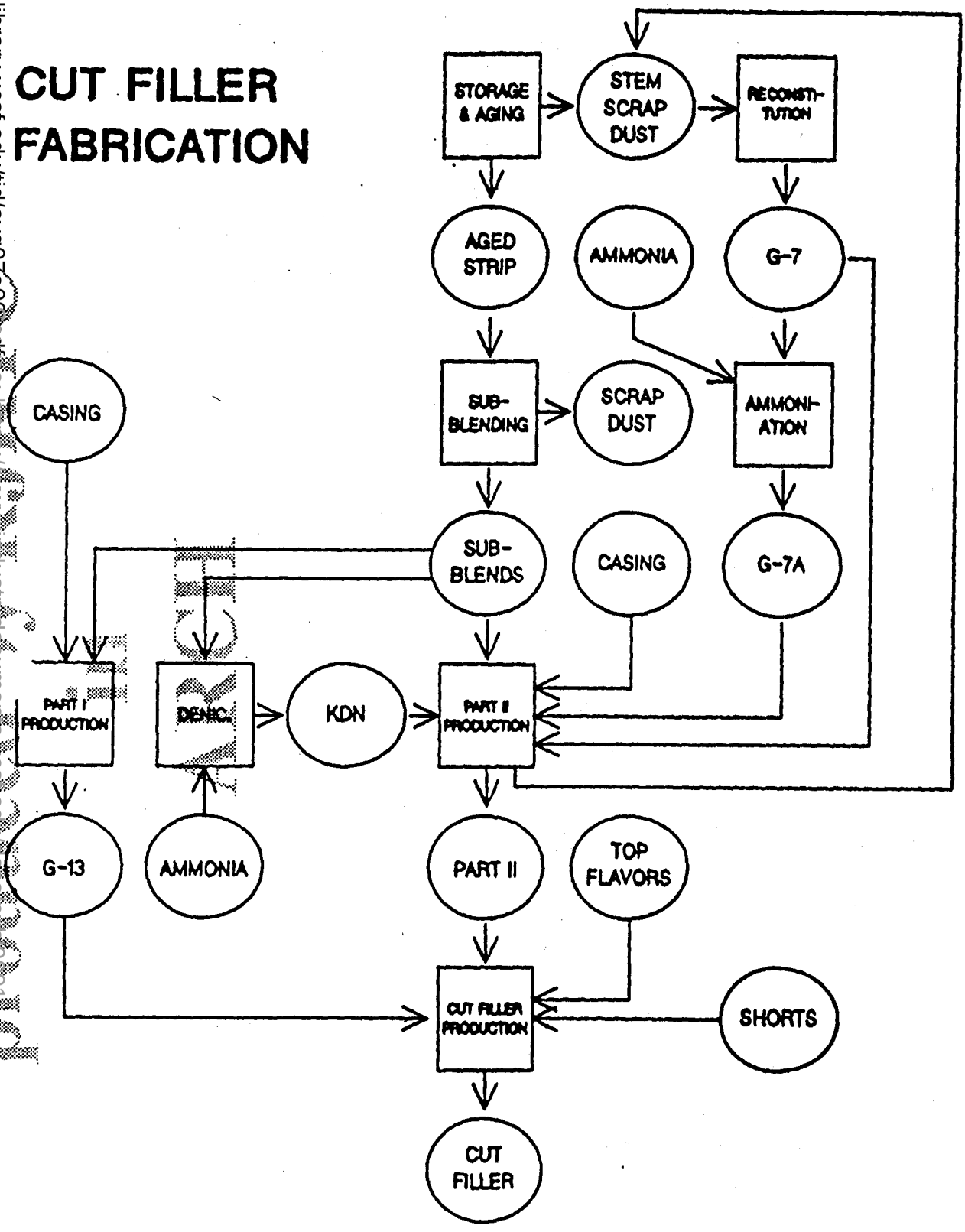
RE: POUNDAGE USED FOR TOBACCO ADDITIVES - TOBACCO PROCESSING DIVISION

ADDITIVE	USED		LOCATION(S)
METHOPRENE (KABAT)	1,468	GALS.	BROOK COVE
ANHYDROUS AMMONIA	369,892	LBS.	605P, 603P, 90P
DIAMMONIUM HYDROGEN PHOSPHATE	360,789	LBS.	603P, 90P
TRICHLOROFLUOROMETHANE (FREON II)	267,294	LBS.	DIET
CARBON DIOXIDE, CO2	20,687,009	LBS.	DIET

TOBACCO OPERATIONS

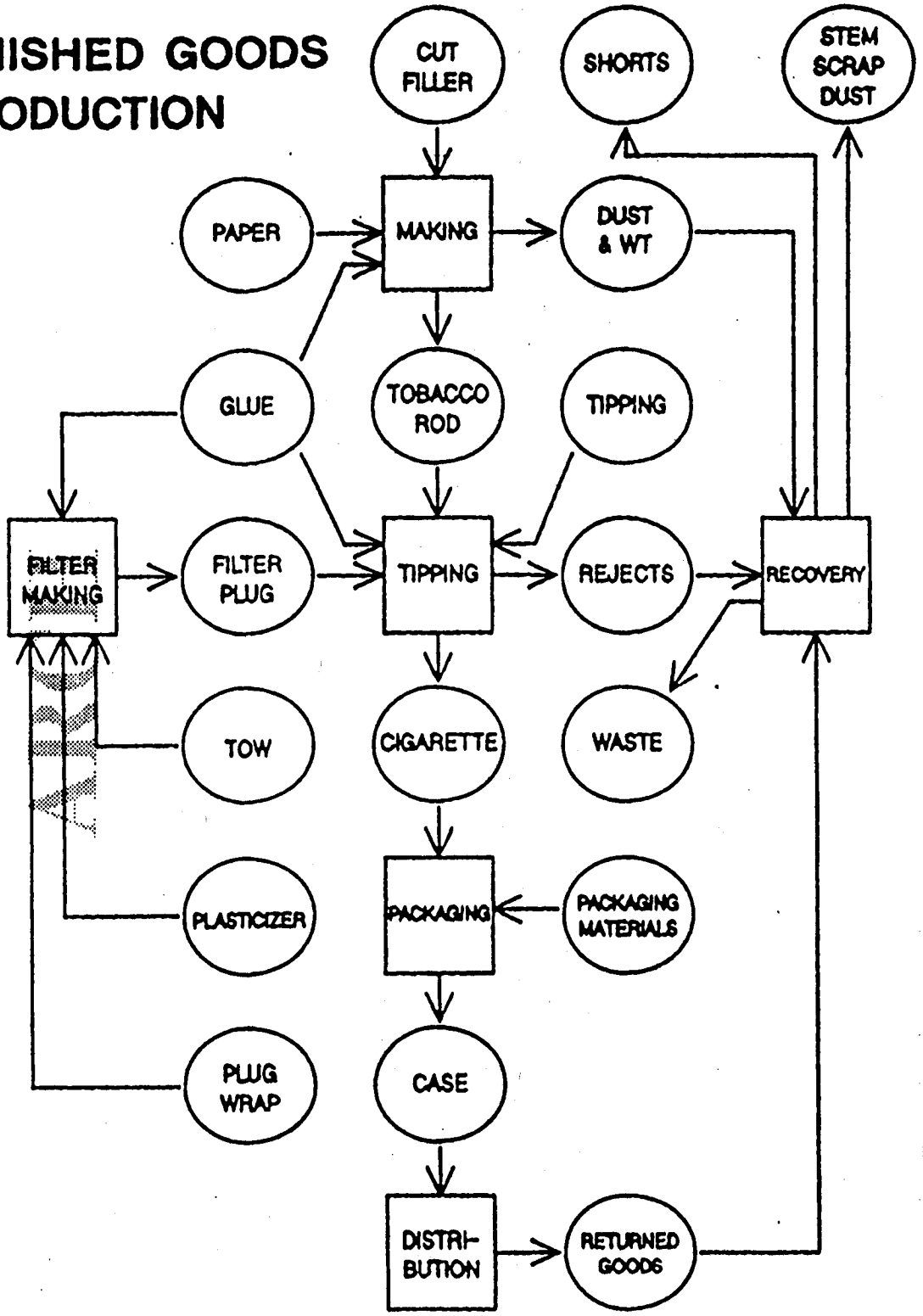
TOBACCO SUPPLY

CUT FILLER FABRICATION



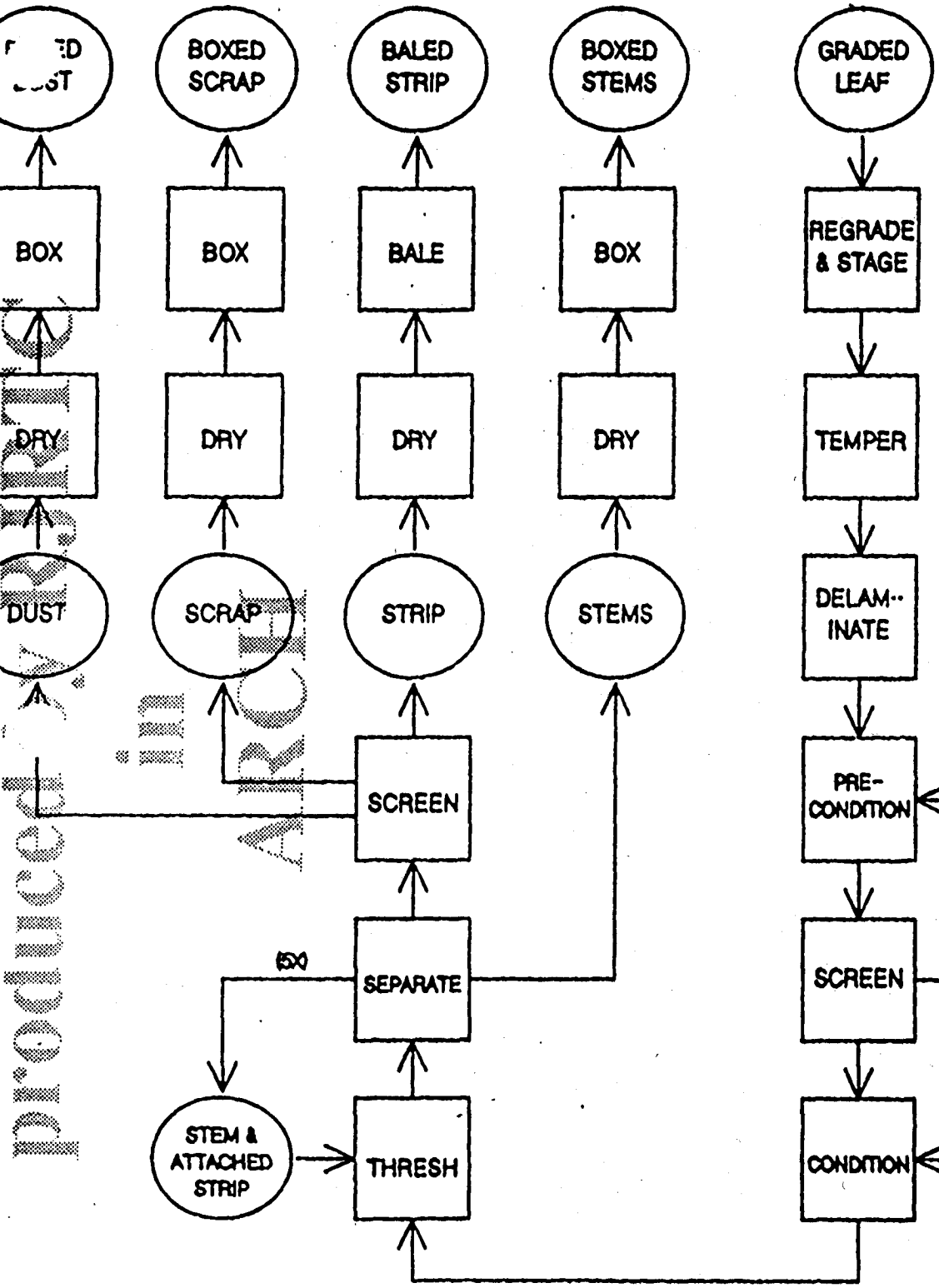
3/11/85

FINISHED GOODS PRODUCTION



3/11/85

STEMMERY OPERATIONS



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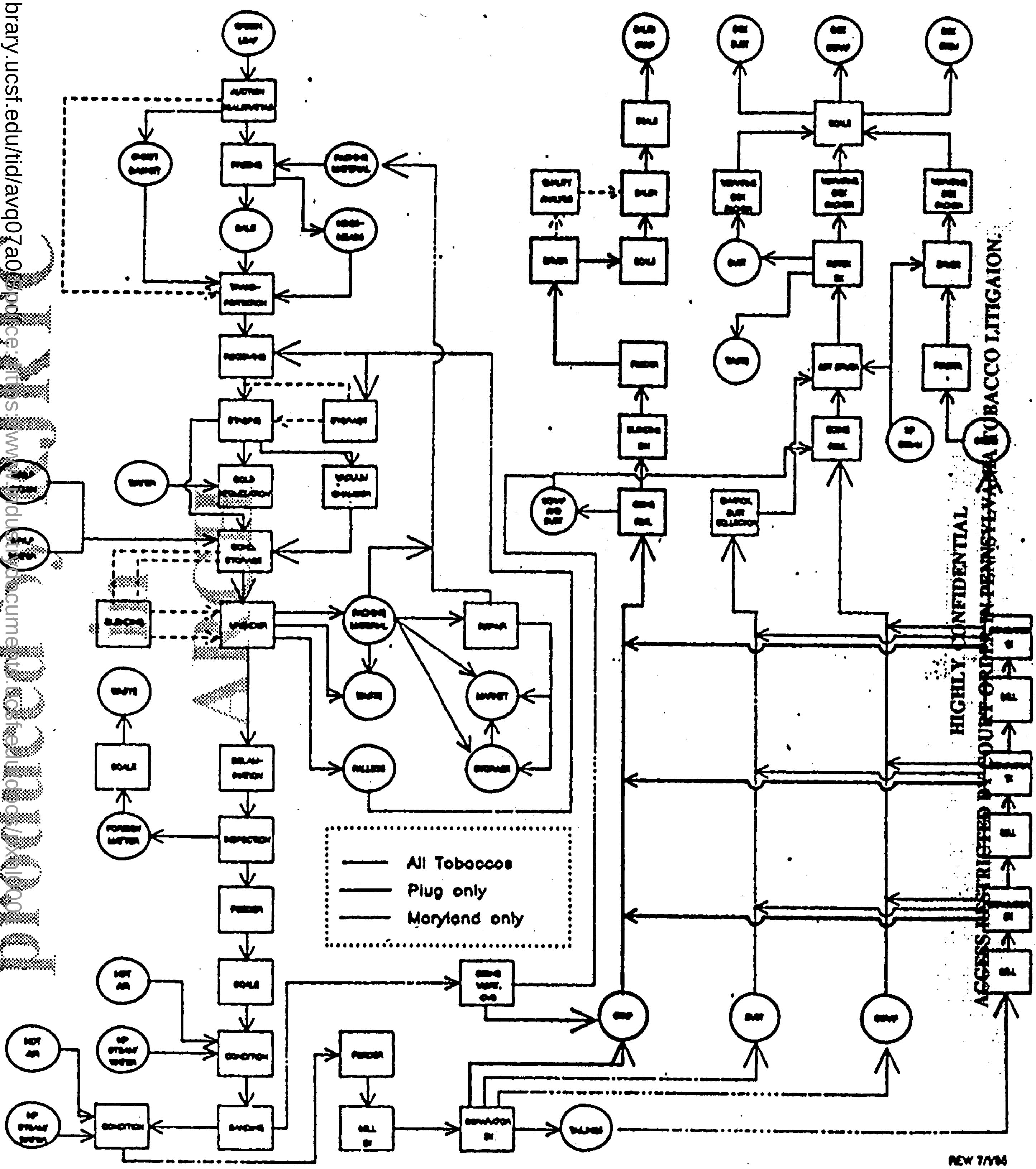

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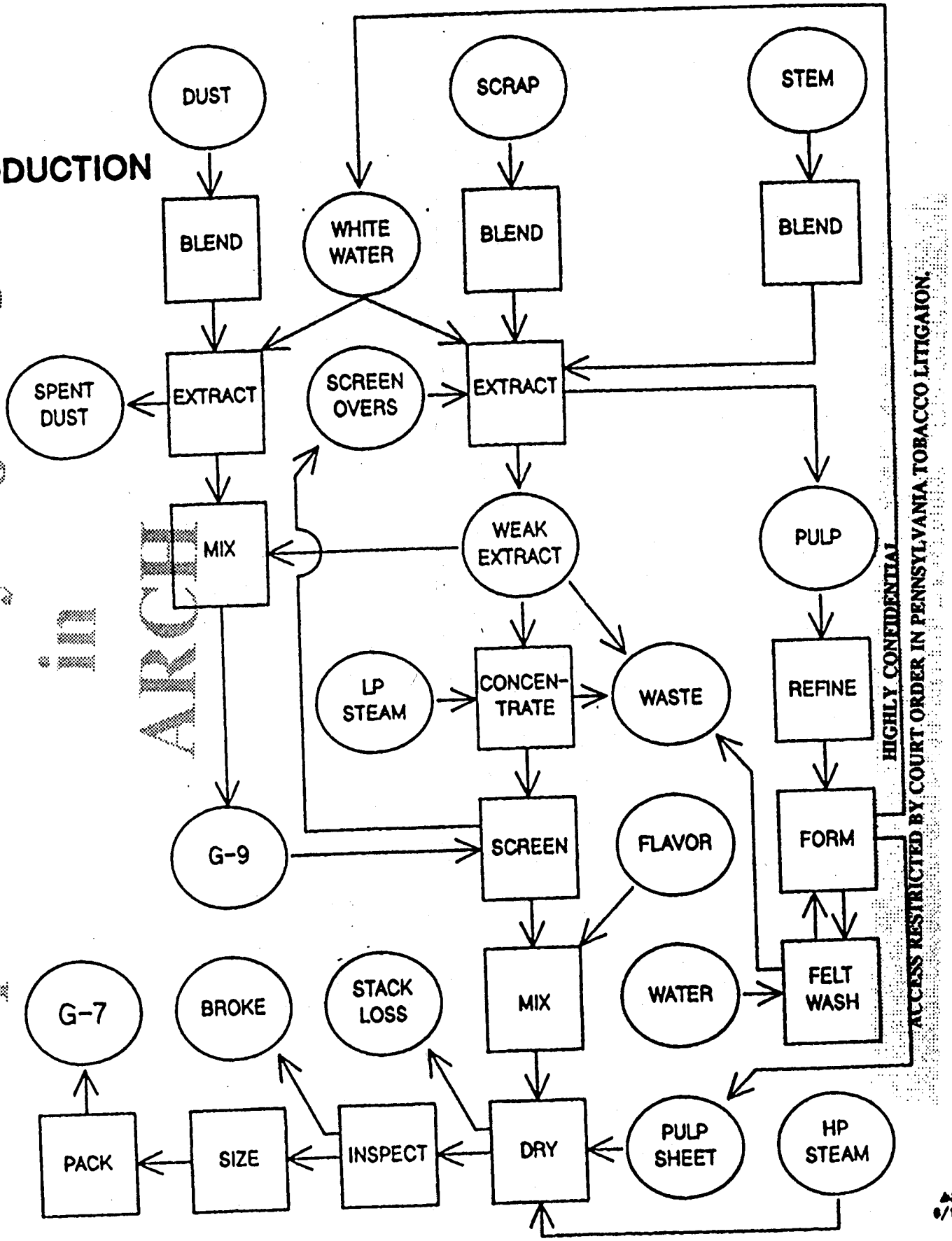
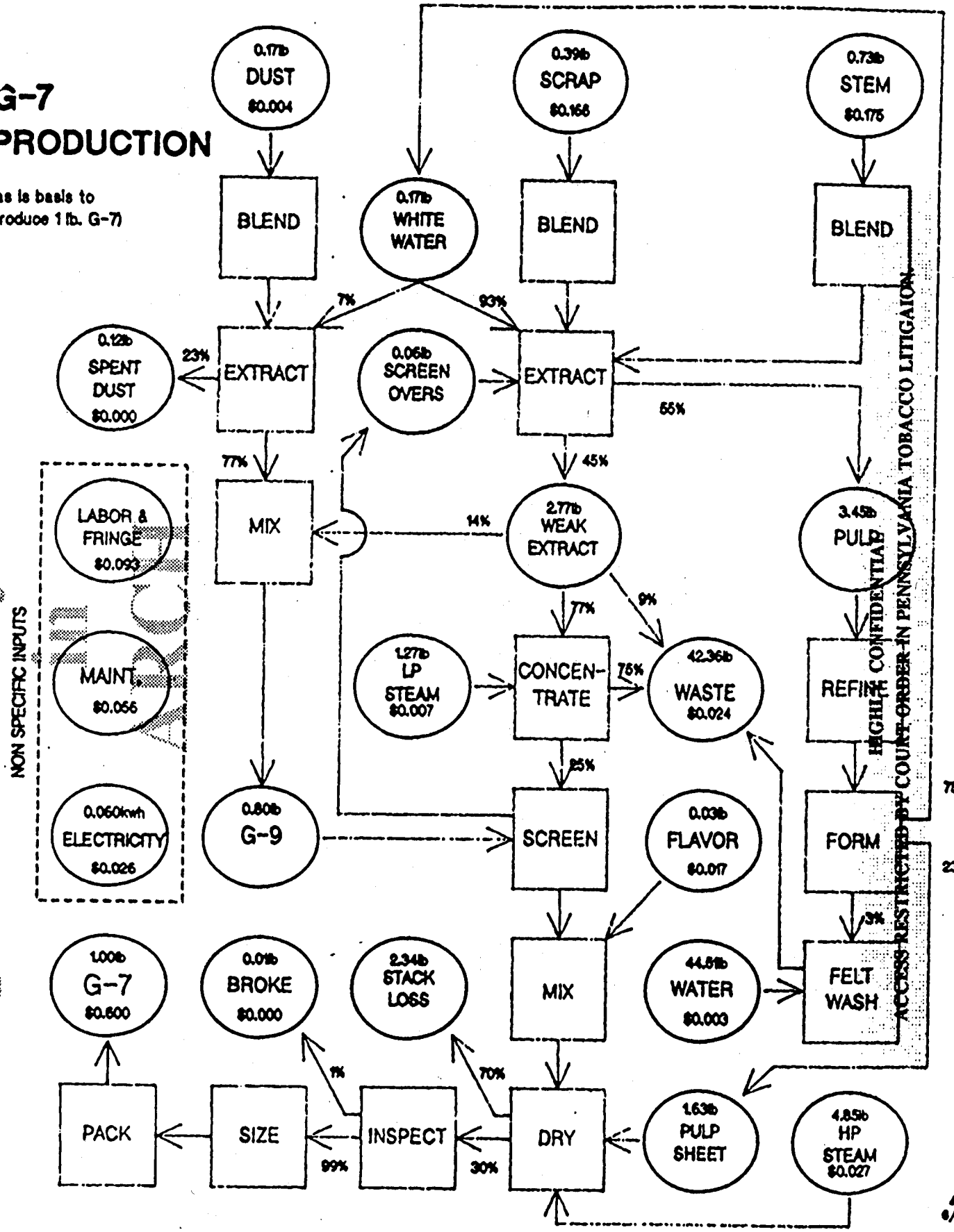
-7
RODUCTION



8/12/85

G-7 PRODUCTION

(as is basis to produce 1 lb. G-7)



HIGHLY CONFIDENTIAL
ACCESS RESTRICTED BY COURT ORDER IN PENNSYLVANIA TOBACCO LITIGATION

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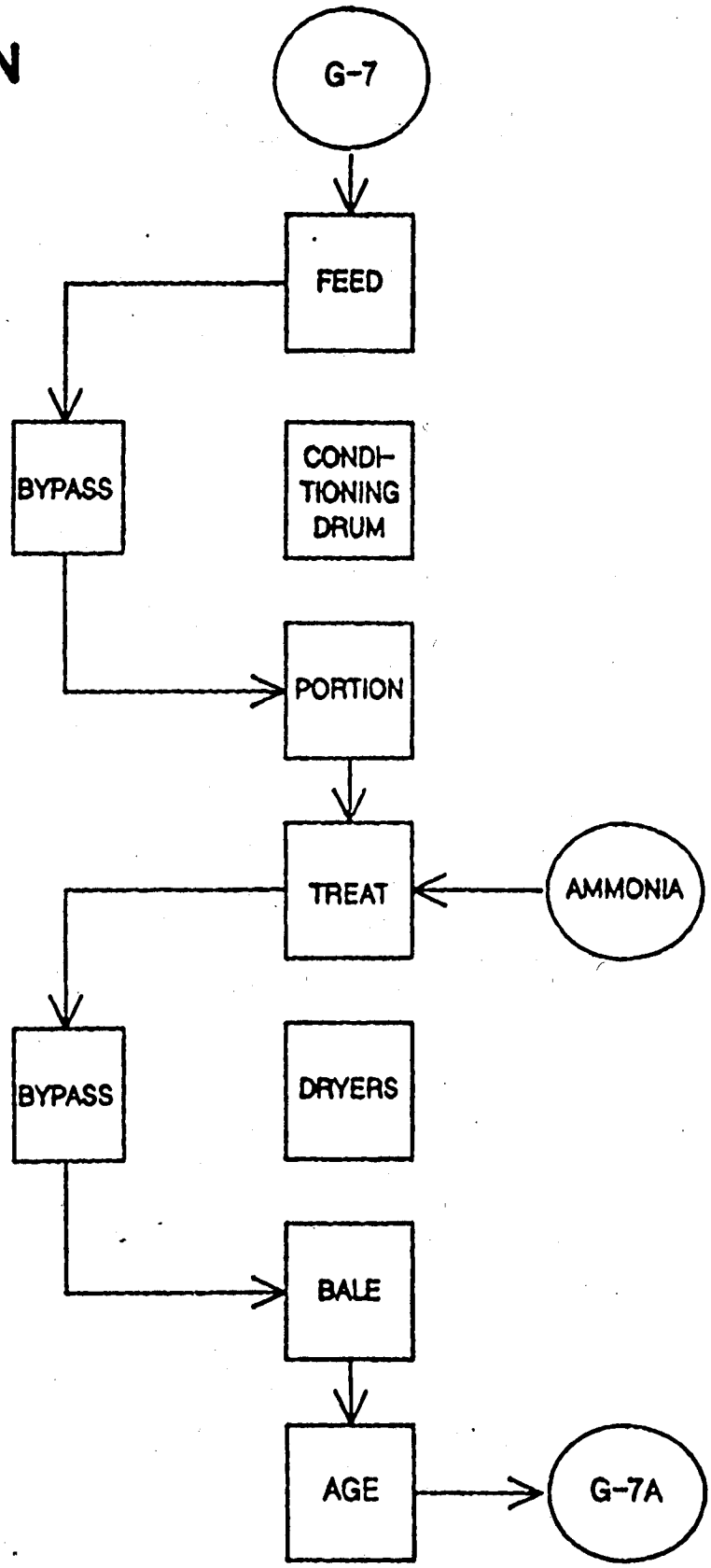
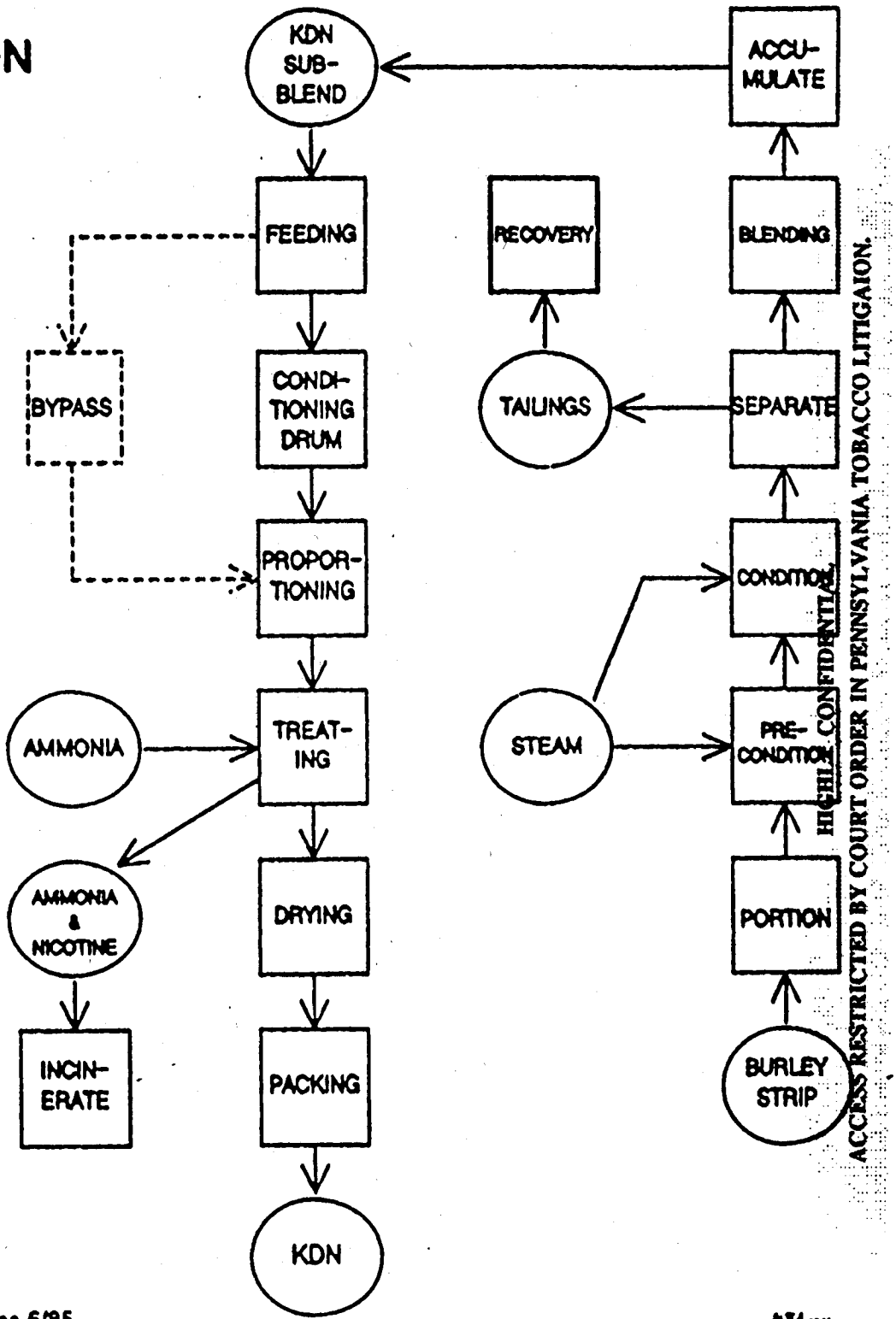
3/11/83

G-7 PRODUCTION

G-7A PRODUCTION



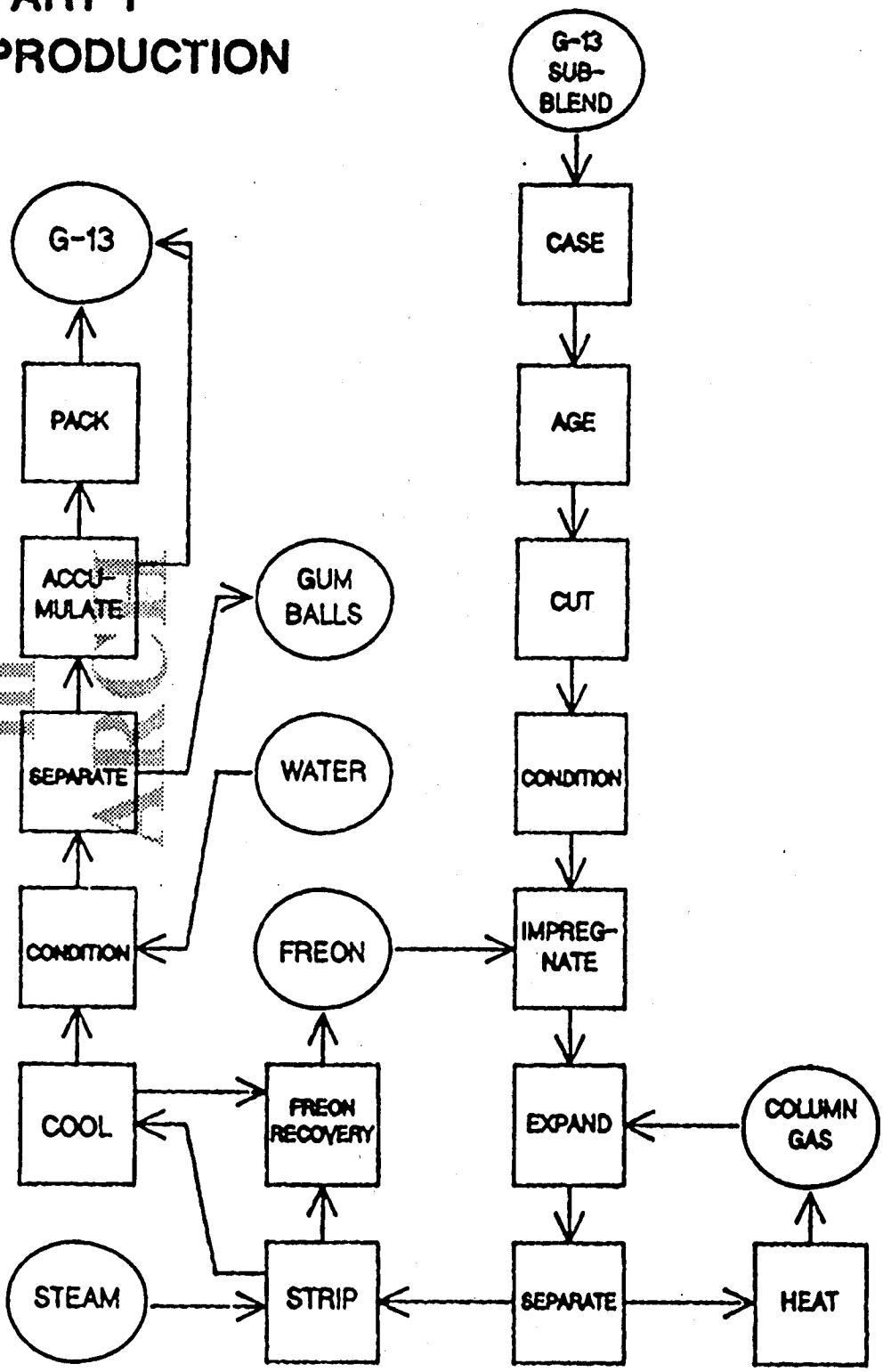
KDN PRODUCTION



---------- Changes 6/85

3/11/85

PART I
PRODUCTION



CUT FILLER PRODUCTION